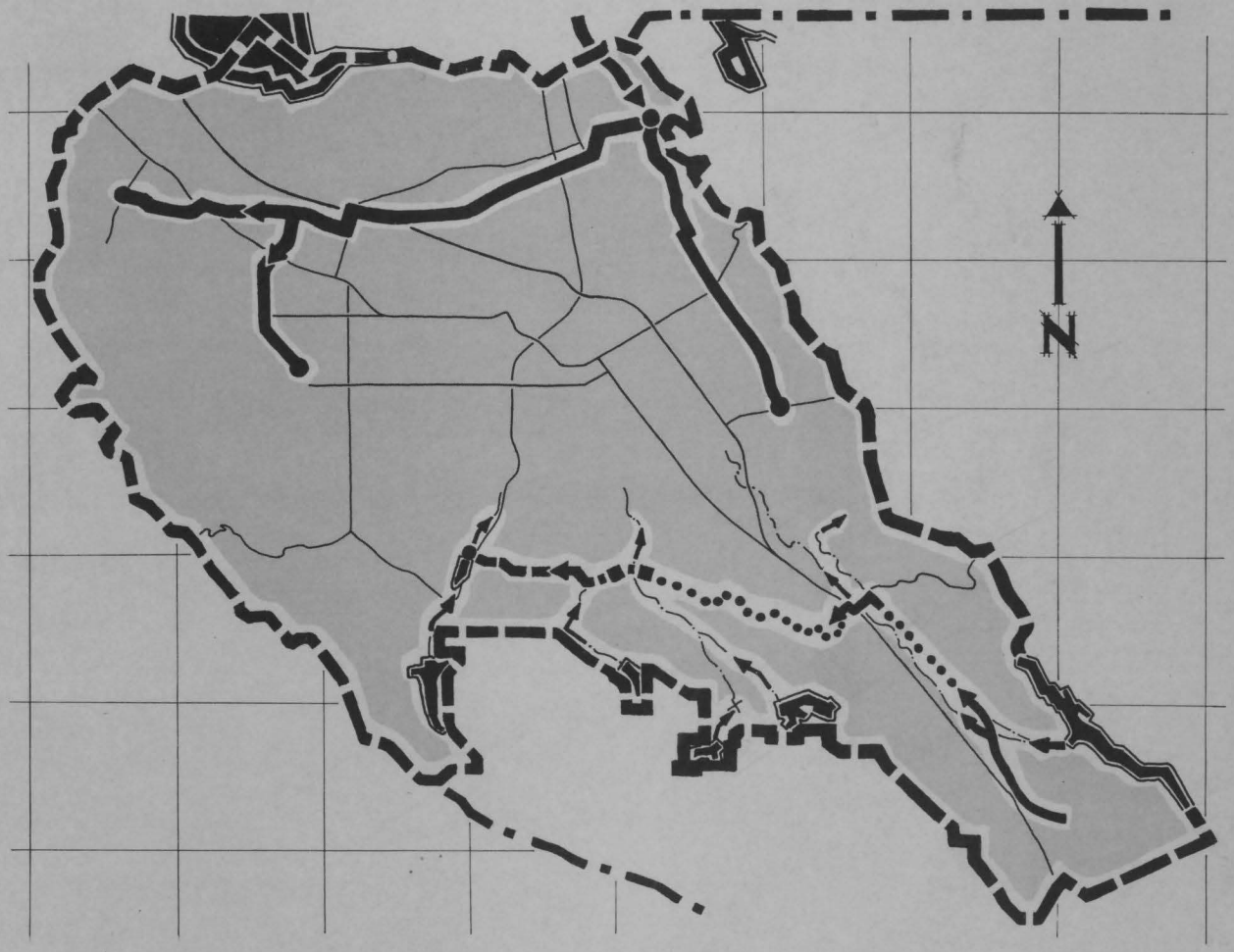
J. N. Fumu

SANTA CLARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



UNIFIED COUNTY WATER PLAN

FEBRUARY 1961

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SANTA CLARA COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
112 Hamline Street
San Jose 10, California
CYpress 5-1050, Ext. 657

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PENINSULA DIVISION
S.F.W.D.

February 6, 1961

Dear Sir:

This morning the Santa Clara County Board of Supervisors adopted in principle and policy, the enclosed Unified County Water Plan submitted to them by their Special Water Committee.

The Plan was adopted by the Board subject to review and recommendation of the Santa Clara County Water Commission as explained commencing with page 6 of the text.

It is felt that this report represents a comprehensive, equitable, impartial, and beneficial program toward solving the critical water needs of our County.

The Santa Clara County Board of Supervisors is now prepared to move forward rapidly with the water program. The water supply of this County is critical. It is urgently recommended that you analyze the plan so that an early solution to our problems can be achieved.

We will be glad to answer any questions you may have.

Very truly yours,

Donald K. Currlin

DONALD K. CURRLIN
Manager-Counsel

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SAN FRANCISCO WATER DEPARTMENT

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another copy came in mail
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Report to the Board of Supervisors
of the
Santa Clara County Flood Control and Water Conservation District

UNIFIED COUNTY WATER PLAN

Prepared by
The Special Water Committee of the Board of Supervisors
appointed March 28, 1960.

SANTA CLARA VALLEY WATER DISTRICT
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SAN JOSE, CALIFORNIA 95118

February 3, 1961

Board of Supervisors
Santa Clara County Flood Control
and Water Conservation District
20 West Rosa Street
San Jose, California

Gentlemen:

Transmitted herewith is a report for a unified water plan for Santa Clara County. Appreciation is expressed for information supplied by the Santa Clara Valley Water Conservation District and to Mr. Ants Lahi of the Santa Clara County Flood Control and Water Conservation District for analyses and cost estimates of distribution systems shown on the plates.

Very truly yours,

Wesley L. Hubbard
WESLEY L. HUBBARD

Thelo A. Perrott
THELO A. PERROTT

Donald K. Currlin
DONALD K. CURRLIN

DKC:am

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UNIFIED COUNTY WATER PLAN

SECTION I - INTRODUCTION

The time has arrived for decision on the water problems in Santa Clara County. All of the existing studies and some studies still in progress have been analyzed by the Review Board jointly hired by the Santa Clara County Flood Control and Water Conservation District and the Tri-County Water Authority. The Review Board has recommended that the South Bay Aqueduct be used for importing water into northern Santa Clara County. Construction of the South Bay Aqueduct has already begun. Such construction will falter and be delayed unless a contract is entered into in the near future with the State of California. Other reasons make it imperative that decisions be forthcoming immediately on the solution of our remaining water problems. By the terms of the contract already executed between the State of California and the Metropolitan Water District, the Metropolitan, after December 31, 1963, could exercise an option for all uncontracted-for water to be produced by the initial conservation facilities of the California Water Plan. Unless action is taken immediately to resolve the remaining problems, Santa Clara County could be left high, dry, and without the water it will need in the future.

It is now necessary that decisions be reached upon coordinated future planning, construction scheduling, financing of facilities to be constructed, pricing of water to be sold, a determination of the way in which facilities to be constructed will be operated and maintained and other related subjects.

Up to this time there has been no report which has considered all of the above related problems and made recommendations thereon. It is, therefore, the purpose of this report to make such recommendations, with explanations and the reasons supporting the same.

In July of 1960 a special water committee appointed by the Board of Supervisors submitted a progress report relating to the pricing and handling of water within Santa Clara County. Discussion of the progress report was thereafter had with the cities now buying water from Hetch Hetchy, a committee of the Santa Clara Valley Water Conservation District, the Cities of San Jose and Santa Clara, who rely primarily on underground water supplies, the San Jose Water Works, California Water Service, the South Santa Clara Valley Water Conservation District, and the Cities of Morgan Hill and Gilroy. These discussions proved quite valuable and provided the foundation for many of the following recommendations.

SECTION II - PLANNING REQUIREMENTS

1. The sixty-year period ending in 2020 should be adopted by all water agencies as the planning period.

2. The water demand for Santa Clara County as determined by the Bureau of Reclamation should be adopted.

The Review Board report agrees with generally prevailing conclusions to the effect that the character of northern Santa Clara County will in its ultimate development be one of municipal and industrial use, not only on the valley land but the areas on the adjacent hills. However, the Review Board felt that any present forecast of when this development may be reached is necessarily speculative and uncertain. The Review Board apparently adopted the school of thought which feels that looking sixty years to the future is comparable to looking into a crystal ball. The opposing school however, reasons that in planning water problems we should look to the "ultimate" demand and do all our planning for the ultimate. This school of thought will readily agree that there is extreme difficulty in defining just what is meant by the "ultimate". The Review Board's position is that a projection of sixty years in the future cannot be precisely accurate; that the issue to be decided now is the determination that the facility which will be constructed will serve for a reasonable period of time and when that time arrives the facility will have reached its capacity. There is no inconsistency between adopting the philosophy of the Review Board and at the same time having a long-term goal on which all agencies could base their planning. If occurrences in the future prove the planning period to be too long or too short and the water demand to be too high or too low, then these factors could be easily adjusted, just so long as all the agencies concerned with water importation and use are in common agreement and both present and future planning by all concerned proceeds along the same lines.

It is not contended that one planning period is better than the other, however it seems vital to a coordinated program that all interested agencies agree upon one goal or method of approach in planning and solving our local water problems.

The Bureau of Reclamation has estimated that the water needs of Santa Clara County to be as follows:

a) Fifty thousand acre-feet per year for the South County
b) Two hundred seventy thousand acre-feet per year for the North County, of which 120,000 acre-feet per year can be percolated and 150,000 acre-feet per year should be distributed through surface pipe lines.

The above water demands are those estimated to be reached in year 2020.

The reasons for recommending adoption of the Bureau's planning period and water demand are as follows:

a) The Bureau is recognized as an expert in the water field
b) The Bureau's study is the most recent
c) The Bureau has spent over a year in analyzing the water needs of Santa Clara County
d) The Bureau's method of analysis seems realistic, reasonable, and reliable
e) In its analysis the Bureau has been unfettered by local political influence

A rough analysis of the Bureau's water demand indicates a per capita use per day of 175 gallons based upon a reasonable population projection of 2,450,000 in the year 2020. Present per capita use in Santa Clara County is around 150 gallons per person per day. Therefore, the Bureau's figure of 175 gallons per person per day seems to allow for a reasonable expansion of water uses without going overboard.

SECTION III - USE OF THE SOUTH BAY AQUEDUCT

1. The South Bay Aqueduct should be used to supply treated municipal and industrial water for the North County.

2. A contract should be entered into immediately with the State of California for supplying Santa Clara County with approximately 150,000 acre-feet per year in the year of maximum delivery, namely year 2020.

The Review Board report states that while eventually some surface service may be required as use is increased, it appears that the drafts for San Jose, Santa Clara, and the municipalities in the southwest portion of the pressure area can be met by recharge in the forebay. The northern cities, namely Palo Alto, Mountain View, Los Altos, Los Altos Hills, Sunnyvale, Milpitas and the Monta Vista area, as well as the eastern portion of the pressure area between Milpitas and Evergreen and the adjacent eastern hillside area will therefore require some form of surface delivery. The terminal point of the South Bay Aqueduct will deliver water into the Milpitas area at an elevation of approximately 470 feet above sea level. From that point, water can be delivered by gravity through pipe lines to the Palo Alto area with turn outs for Monta Vista and all of the cities between Milpitas and Palo Alto. Similarly, the area between Milpitas and Evergreen can be served by gravity. A study by the Flood Control and Water Conservation District staff indicates that all of the 150,000 acre-feet of treated

water can be used in the northern and eastern areas of North Santa Clara County by the year 2020, possibly before that date. This is the approximate amount of water which should be distributed by the surface distribution system according to the determination of the Bureau of Reclamation. If the South Bay Aqueduct is used to supply treated municipal and industrial water for the North County, the following advantages will result:

a) A single treatment plant could be used for treating water to be delivered in such areas
b) The terminal point of the South Bay Aqueduct at elevation 470 would allow a distribution system that would operate by gravity without any pumping costs being incurred to Palo Alto or Evergreen. Pumping costs to the east valley hills would be substantially reduced
c) The terminal point of the South Bay Aqueduct is at the angle point of the "L" shaped area to be served
d) Development within this area is progressing at a rapid rate and the water could be put to immediate municipal and industrial use

Why should a contract be entered into immediately with the State of California for the delivery of water from the South Bay Aqueduct? Aside from the urgent need for water, the answers to this question are many and varied. As pointed out in the introduction the existing contract between the Metropolitan Water District and the State of California makes it imperative that our water importation program be brought to a head at the earliest possible time. As pointed out in the Review Board report, the cities in the northern part of Santa Clara Valley have a present total use of about 45,000 acre-feet per year, of which nearly 15,000 acre-feet is now purchased from San Francisco. A contractual arrangement assuring a firm water supply would provide a guarantee to these cities so that they could reduce or eliminate their purchases of Hetch Hetchy water at expensive rates in excess of $70 per acre-foot. When such assurance is given it is reasonable to assume that such cities would avail themselves of the cheaper source of water. This in turn would encourage the use of water from such pipe lines reducing the unit cost for each acre-foot.

Water delivered from the South Bay Aqueduct would require filtration and treatment for municipal and industrial use. According to the State construction schedule, water will be available in Santa Clara County in early 1965. Treatment plant facilities and pipe lines should be constructed by that time so that water can be put to immediate use. It will take almost four years to plan, finance and construct a water treatment plant. In order to properly design the staged construction of such a plant, it is essential that we have firm knowledge of the amount of water which will be treated. A contract will supply this knowledge.

Also and of vital importance, is the fact that the South Bay Aqueduct is now under construction. By entering into a contract at this time, we can assure ourselves that the facility will be built to a capacity that we desire. To delay contractual obligations might result in a facility being built that will not provide the capacity desired in Santa Clara County. Present State plans call for delivery of water to Santa Clara County in an amount of 88,000 acre-feet. According to the report of the Review Board this amount would last only from fifteen to twenty years. This means that at the end of twenty years a second stage or parallel facility would be needed to augment the supply of the South Bay Aqueduct. Contracts with the State of California will repaid over a period exceeding fifty years. If new facilities are needed in a period of twenty years we would start payments on the new facility and at the same time continue our payments for more than an additional thirty years on the old facility. This would mean a double payment on the thirty odd year overlapping period. Payments under a state contract are fairly level during the first fifty-two or fifty-three years with rapidly diminishing payments thereafter. The logical result then is that we should contract for a facility which will supply the fifty or sixty-year demand. Such a contractual arrangement would allow for more level payments over the assumed life of the project.

Finally, the Review Board points out that 88,000 acre-feet of water will be used in from fifteen to twenty years. The existing contract with the Metropolitan Water District provides southern California with a supply of water estimated to last thirty years. From the standpoint of self-protection it is imperative that we at least equal the thirty year supply in our contractual relationships and if possible obtain a greater supply.

The contract for approximately 150,000 acre-feet in the year of maximum delivery would satisfy all of the abovementioned aims.

SECTION IV - USE OF THE PACHECO PASS ROUTE

1. The Pacheco Pass Route should tentatively be planned as the import route for -

a) All water requirements of the South County
b) All percolated water requirements for the North County and possibly for some treated water in the Calero and Almaden Valleys if the need arises

As pointed out in the Review Board Report the Pacheco Pass Route is still under study by the Bureau of Reclamation. It is anticipated that this study will be completed in July of 1962. Such a project would be subject to the terms of the Reclamation Act which include interest-free payment of construction costs allocated to irrigation and if the project becomes a part of the

Central Valley Project reduction in irrigation costs might be secured by means of a federally-subsidized price for electrical power for project pumping. As urbanization of the North County continues it should be anticipated that the subsidy would be removed. If such is the case, percolated water would be delivered more cheaply from the South Bay Aqueduct as pointed out in the report of the Review Board. However, the Review Board states, on page 176 of the supporting data "Even if the South Bay Aqueduct is to be used to supply the northern cities and it is constructed promptly, it will not be available to Airpoint until the time when the report of the Bureau is now scheduled to be completed. A decision regarding the extension of the South Bay Aqueduct to supply water for percolation in the Forebay can then be made on the basis of the costs and other factors applicable to the delivery of imported water by the South Bay Aqueduct or the Pacheco Pass Routes..... .....A decision between the extension of the South Bay Aqueduct to Coyote Creek or the construction of the Pacheco Pass Route can be deferred until the terms and conditions of service obtainable from the Bureau's San Felipe Division of the Central Valley Project has become available in the Bureau's report."

It seems reasonable, therefore, to await the results of the Bureau of Reclamation and to tentatively plan on the Pacheco Pass Route being used as the import route for all water requirements of the South County and for the percolated water requirements of the North County. The possible subsidy may make this route a cheaper source for percolation purposes.

SECTION V - JURISDICTION AND ADMINISTRATION

1. Importation contracts should be executed by the Board of Supervisors.

2. The Board of Supervisors should appoint members of a nine-man Santa Clara County Water Commission consisting of one elected official from each of the following agencies and to serve at the pleasure of the Board.

Santa Clara Valley Water Conservation District
South Santa Clara Valley Water Conservation District
City of Palo Alto
City of Mountain View
City of Sunnyvale
City of Santa Clara
City of Milpitas
City of San Jose
City of Cupertino

3. The Board of Supervisors should adopt a resolution stating that the above Commission would be the agency to coordinate the water program for Santa Clara County.

Water imported into Santa Clara County will be served in areas that are outside the existing boundaries of both water conservation districts. The Board of Supervisors is elected by and represents all of the people outside of, as well as within, the existing water conservation districts. In order to obtain the proper relationship of authority and responsibility, all matters relating to major policies should be decided by the Board. It follows that contracts for importing water into Santa Clara County should be executed by a political body that represents all of the present and prospective water users. With the Board of Supervisors as the contracting agency there would be a direct line of responsibility from the elected political body to the water users and beneficiaries both present and prospective who by their vote would elect the Board.

For many years Santa Clara Valley Water Conservation District has occupied the field of water conservation and distribution for irrigation or percolation purposes in North Santa Clara County. The north valley Water Conservation District and the south valley Water Conservation District have constructed several dams which have performed a notable function in Santa Clara County. For some time the Santa Clara County Flood Control and Water Conservation District has occupied the field of flood control. In the above two mentioned fields neither agency has encroached upon the operations of the other.

None of the above agencies has ever engaged in the program of importing water, nor distributing water on a wholesale basis for municipal and industrial use by means of water purification and surface distribution lines. Much confusion has arisen over who should import water and why. One of the basic arguments in favor of using the Santa Clara County Flood Control and Water Conservation District as the importing agency, is that the Flood Control District, as explained above, is governed by the Board of Supervisors who represent and are elected by all of the people of the County of Santa Clara and is a proper body to supervise a County-wide water program and coordinate it with other projects of County-wide interest. The Board would speak with one voice for the County as a whole. The most prevalent argument against using the Board of Supervisors is that the Board has many other County-wide problems to consider and could not devote adequate time to the water program. On the other hand, it is the feeling of some of the metropolitan areas that their elected representatives have no voice in either of the Boards whether it be the Board of Supervisors or the independently elected boards of one of the water conservation districts. To retain the advantages of the County-wide representation found on the Board of Supervisors and to eliminate the possibility of the above mentioned disadvantages, it is recommended that an advisory Santa Clara County Water Commission be created which would allow for a more localized representation of all interested parties and at the same time provide for final authority to rest in the hands of the Board of Supervisors.

The Water Commission should be large enough to allow for proper

localized representation, but not so large as to become unwieldly. Therefore, the recommendation is that a nine-man committee be formed, consisting of representatives from each city owning or operating a municipal water system and the two water conservation districts. Function of the Commission would be to consider proposals for maintenance and financing of new water salvage, importation or wholesale distribution facilities, annual purchases of imported water, water pricing proposals, budget review, bond proposals, public education activities and so forth.

Those interested in ground water replenishment would be adequately represented by the Cities of San Jose and Santa Clara along with the two Water Conservation Districts. Those interested in surface delivered water would be adequately represented by the Cities of Palo Alto, Mountain View, Sunnyvale, Cupertino and Milpitas. There would thus be created a Commission that could devote full time to the water importation program and at the same time the Board of Supervisors, as the elected representatives of all the people of the County, would carry out the responsibility of County-wide elected officials. The creation of such a Commission would eliminate the need for any new super agency and the expenses necessarily connected therewith such as duplicate overlapping staffs, equipment, or administrative office space.

SECTION VI - FINANCING AND TAXATION

1. The area in the North County which will receive direct or indirect benefit from existing conservation facilities or future import facilities should be immediately formed by the Board of Supervisors into a Zone of Benefit.

2. All future bond elections in the zone should be called by the Board of Supervisors.

3. All revenues derived from the sale of water, should be pooled to pay off existing and future bonded indebtedness, continuing operation and maintenance expenses in the North County Zone, and future contractual obligations with the State of California and/or the Bureau of Reclamation.

4. Ad valorem taxes should be levied on land only and should be used initially to pay off the difference between revenues and costs.

5. Ad valorem tax levies (except as set forth in recommendation 6 below)should be levied by the Board of Supervisors.

6. The Santa Clara Valley Water Conservation District should refrain from levying future taxes (except an initial amount to be held in reserve for the ensuing year's outstanding bonded indebtedness).

7. The Board of Supervisors should pay the Santa Clara Valley Water Conservation District from revenues or taxes levied within the North County

Zone sufficient funds to pay off its outstanding bonded indebtedness and properly maintain existing works owned by it and to be maintained by it in the future.

8. Legislation should be adopted by the State Legislature which would allow for the establishment of a water replenishment assessment in the zone under the following conditions:

a) Metering of wells would be required upon adoption of the legislation
b) Records of metered wells would be maintained and analyzed for at least two years before levying any water replenishment assessments
c) No water replenishment assessment program would be started without prior affirmative vote of a majority of those voting in the zone

9. If a water replenishment assessment is adopted and approved it should be used as a partial substitute for ad valorem taxes and ad valorem taxes be reduced accordingly.

One of the most difficult problems relating to any public works construction program is that of financing. The goal should be one whereby all those who receive benefit from the works to be constructed pay their fair share. There are several shortcomings in the financial structure now used to provide revenues for the water program in Santa Clara County. These shortcomings are best illustrated by examples.

Example 1. Certain areas within the Santa Clara Valley Water Conservation District are, in addition to paying the land tax paid by everyone in the District, also purchasing substantial water from the Hetch Hetchy water system at prices in excess of $70 per acre-foot. The most extreme example of this is the southwest portion of the City of Milpitas. No water is drawn from the underground by the Milpitas Water District, which uses 100% of Hetch Hetchy water. The Cities of Sunnyvale and Mountain View supplement their ground water with purchases from the Hetch Hetchy water system. Payments in the form of taxes to the Santa Clara Valley Water Conservation District as well as payments to the Hetch Hetchy system amount to a form of double taxation.

Example 2. Some areas outside of the Santa Clara Valley Water Conservation District are receiving substantial benefits from the program of that district and are paying nothing for such benefits. The most easily recognizable example of this fact is the area in and around Los Gatos. Lexington Dam and the percolation downstream from the Dam in the bed of the Los Gatos Creek undoubtedly is beneficial to the adjacent underground areas outside the

boundaries of the Water Conservation District. Areas such as these are directly benefited from the available supply of water and also receive the indirect benefits associated with such availability.

Example 3. Certain hillside areas outside the boundaries of the Santa Clara Valley Water Conservation District are also being indirectly subsidized by the taxpayers within the Water Conservation District. The recharge of the underground does not directly benefit these areas. However, most of these areas are served by private water companies which draw their water from the underground. In most instances this water is drawn from areas within the Water Conservation District and piped into the hillside areas. Water rates charged by these water companies are the same both within and without the Water Conservation District. Therefore, a taxpayer within the Water Conservation District is paying the same water bill as the taxpayer outside the Water Conservation District and in addition thereto is paying taxes for the salvage of local waters.

How can these inequities be removed and this complex problem be solved? The answer lies in the available legal machinery found in the Santa Clara County Flood Control and Water Conservation District Act, coupled with the united cooperative action of the two water conservation districts. Pursuant to existing legislation, and without the need for establishing another overlapping agency or district, the Flood Control and Water Conservation District could form a zone of benefit by resolution of the Board of Supervisors. In the North County, this zone should include all the territory presently within the Santa Clara Valley Water Conservation District and all areas outside of the District receiving direct or indirect benefits from either the existing program or the future importation program. Plate 1 shows boundaries of the two Water Conservation Districts and the proposed North County zone of benefit. Ad valorem taxes could be levied in this zone to pay the costs of the existing and future water program, at least until better legal machinery is devised as a possible substitute for ad valorem taxes.

The establishment and levy of taxes within such a zone would not remove all the inequities. The Santa Clara Valley Water Conservation District now has certain outstanding bonded indebtedness and will require certain annual tax levies for administrative, operation and maintenance purposes. If the Santa Clara Valley Water Conservation District were to continue to levy taxes to pay off its bonded indebtedness and operate and maintain the local salvage program while the Board of Supervisors were levying taxes within the Flood Control District zone of benefit to pay off the water importation program, the taxpayers within the Santa Clara Valley Water Conservation District would still be doubly taxed because the Water Conservation District tax would be in addition to the tax within the zone of benefit. This tax inequity could be removed by an agreement between the Santa Clara Valley Water Conservation District and the County-wide Flood Control District. By the terms of such agreement, the Water Conservation District would agree to percolate

all the waters imported by the Flood Control District. As consideration for the use of Water Conservation District percolation facilities and the service rendered by the Water Conservation District in using such facilities for percolation purposes, the Flood Control District would agree to pay the Water Conservation District sufficient monies to meet outstanding annual bonded indebtedness along with administration, operation and maintenance costs. Funds for such payments would be derived by the above mentioned ad valorem tax levy within the Flood Control District zone of benefit. By using this machinery, tax levies within the Water Conservation District boundaries, as a separate tax levy, could be eliminated and payments for the total water program would be spread by the use of ad valorem taxes over the larger Flood Control District zone of benefit.

Certain revenues would be forthcoming to the Flood Control District zone of benefit as a result of direct sales of water from the two lines described above. Similarly, some sales of irrigation water would provide revenue to the Water Conservation District. Ad valorem taxes would be levied in amounts which would supply the difference for annual costs of existing and future programs which are not paid for by these revenues.

Since there are many residents of Santa Clara County who would be outside of the Santa Clara Valley Water Conservation District boundaries yet within the Flood Control District zone of benefit who would be receiving benefits from the water program, it would be necessary that all bond elections be held by the Board of Supervisors so that people in such areas would not be deprived of their right to vote. An incidental but important benefit of having all bond elections held by the Board of Supervisors is that bond sales and bond retirement schedules could be established so that payments and tax levies could be leveled out. There would be no peak period of taxation such as might occur if two separate agencies were to vote their own bond elections and then sell the bonds at the same time. The holding of bond elections by the Board would not place undue power in the hands of the supervisors because one of the functions of the Water Commission would be the determination of what facilities should be built and the amount of the bonded indebtedness to be incurred therefor. It is assumed that the representation by the various interested agencies on that Commission would result in all differences of opinion being solved at the Commission level. The holding of such bond elections by the Board of Supervisors would be more in the nature of a ministerial function.

Another facet of the financing program centers around the type of ad valorem tax to be levied and the possibility of a water-replenishment assessment. If water is to be considered as a commodity then it should be priced in accordance with the amount used. This is the method used by wholesale agencies, and by retail agencies such as city water companies, and the San Jose Water Works. The consumer is charged in accordance with the number of cubic feet of water used.

A water-replenishment assessment is a method whereby wells are metered and a charge is placed upon each acre-foot of water pumped from the ground. The charge is made to cover the costs of replenishing the ground water whether those costs arise from local salvage works or importation works and distribution facilities. The assessment has been legally upheld on the theory that it is in the nature of an excise tax. Charging for water on the combination of revenues for direct sales from pipe lines and a water-replenishment assessment for water pumped out of the ground places all of the burden of paying for the water program on the water user. It would be unnecessary under such a program to levy any ad valorem taxes. However, there are two disadvantages to the water-replenishment assessment theory. One, is that agriculture cannot afford to pay the same water rates per unit of water used as can municipal, commerical or industrial users. Secondly, there would be many acres of land in Santa Clara County which would receive an increased indirect benefit by the mere availability of water even though water was not being used on the property. It is felt that payment should be made for the economic benefit derived from the mere availability of water. Such benefits can be collected through only one method, the levy of ad valorem taxes.

There are however, certain disadvantages to the exclusive use of ad valorem taxes. First, a choice must be made as to whether the tax will be levied on land only or on the full tax base of land improvements and personal property. There is not necessarily a direct relationship between the increase in assessed valuation when improvements and personal property are placed upon land and the increased use of water. For example; agricultural land using the normal amount of water could be improved by the construction of a warehouse. The total assessed value of such property after construction could be quadrupled, while water use would probably decrease. In this example, if the total tax base were to be used the water cost for such parcel of land would be more than quadrupled, but it is hard to conceive that the combination of direct and indirect benefit resulting from the water program received by that property would also be quadrupled. An ad valorem tax on land only eliminates some of these difficulties. When property is urbanized, the land itself is assessed at a higher rate than before development. If the tax were on land only in the above example, the increase in water charges would not be as far out of line as if the tax were on land, improvements, and personal property.

Agricultural land is presently assessed at somewhere around $300 per acre. Medium-class residential acreage is assessed at $3,600 per acre or more. Water use varies from farm to farm and from house to house depending upon the crops grown, farming practices of the operator and habits of homeowner. However, in general it can be said that the average acre of agricultural land will use about the same amount of water as the residential acre. Assuming this to be true, the owner of residential property whose land is assessed at twelve times the rate of the agricultural acre, is paying twelve times the amount per acre-foot of water consumed.

If all water revenues other than direct pipeline sales of municipal and industrial water are derived from tax levies on land only, water would be considered solely as a governmental service and not as a commodity as it would be if all revenues where derived from a water-replenishment assessment. If all revenues were derived from a water-replenishment assessment agriculture would be driven out of business in Santa Clara County. It is for these complex reasons that the recommendation is made that all ad valorem tax levies be on land only and that they be used initially to get the program under way. However, it is also recommended that a water-replenishment assessment be given serious consideration. This could be one of the major topics of discussion by the Water Commission. A step-by-step process could be adopted in establishing any water-replenishment assessment. First it should be studied by the Commission. As a practical matter, legislation to establish a water-replenishment assessment could not be submitted to Sacramento prior to 1963. Upon adoption by the State Legislature of a water-replenishment assessment within Santa Clara County, wells could be metered and accurate records of water uses gathered for a year or two. Upon analysis of the records a proper pricing method could be established in Santa Clara County which would make partial use of the water-replenishment assessment and at the same time proper use of the ad valorem tax levy on land only to ensure that those receiving benefits from the water salvage and import program who are not necessarily using water still pay their proportionate share of the costs.

SECTION VII - PRICING

1. Municipal and industrial water served from pipe lines should be priced at a rate per acre-foot competitive with the average cost of producing well water in the areas served by the pipe lines.

2. If a water-replenishment assessment is established, municipal and industrial water served from pipe lines should be priced at the rate determined by recommendation number one above, plus the amount of the water-replenishment assessment.

3. Irrigation waters served by surface canals or pipes should be priced at a rate per acre-foot that would consider -

a) Agriculture's ability to pay
b) The cost of substitute methods such as wells
c) Tax levies being paid by agriculture
d) Water-replenishment assessments being paid by agriculture if in existence

What is the best method of pricing water in North Santa Clara County? Should the residents in the areas receiving municipal and industrial water pay

for all the costs of importing, treating and distributing the water to be served from the South Bay Aqueduct? The answer to the second question is - No. The water which would be served directly out of the pipe lines to Palo Alto, Monta Vista and Evergreen would be used in lieu of the water that those areas are now pumping from the underground. By encouraging use of the pipe line service, the overdraft on the underground will be relieved. This will make more water available in the underground to the benefit of the remaining areas in northern Santa Clara County. For this benefit, residents of the remaining areas should pay for their proportionate cost of such lines. Secondly, as far as the pipe lines are concerned there is little, if any, difference between a pipe line constructed to deliver purified water and a pipe line constructed to deliver untreated water to the percolation fields. The main elements of difference between a system of percolation and pumping as compared to a system of treatment and distribution by surface lines, are as follows:

a) Imported water used for municipal and industrial purposes must be treated
b) Percolated water must be pumped out of the ground

The basic idea behind the recommended pricing structure is to make both systems relatively equal and competitive, that is to say that the price of municipal and industrial water served from pipe lines from a Milpitas Treatment Plant would be priced at a rate per acre-foot which would equal the cost of well installation, operation, maintenance and pumping costs in those areas where surface distribution lines can replace the use of wells. Preliminary investigations have shown that the cost of producing water by the means of pump installation, operation and maintenance, runs to approximately $20 per acre-foot. This price should be established at the rate per acre-foot for water sold from pipe lines. It would then be just as cheap to buy water as to pump it. The encouraged use of distribution lines will make more water available in the areas that have good underground water supply. This in turn will shorten the pump lift and pumping costs will be reduced for those who use well water. In addition, under the zone of benefit theory hereinabove proposed, those areas being served by surface distribution lines would also be contributing to the cost of supplying, distributing, and percolating underground waters.

Although further investigation is needed to determine the cost of producing ground water from wells, for purposes of illustration we can accept the cost of $20 per acre-foot. By pricing water at $20 per acre-foot, which would be sold at such price from the surface distribution lines after treatment, the probabilities are that those areas which have the availability of service from such pipe lines would switch over to the use of such pipe line rather than replace old wells or construct new ones. In such areas, although the cost of water would remain approximately constant, no large capital investments would be needed for the construction of new wells. Such pricing plan would encourage the use of treated municipal and industrial water on the north and east sides of North Santa Clara County. This in turn would tend to increase the use of

such lines which in turn, because of the greater volume in use, would reduce the treatment cost and unit cost per acre-foot of water delivered through such lines. The reduced cost per acre-foot of imported water would be reflected in a lower tax rate. The greater recharge of the underground would be reflected in a saving in pumping costs in those areas depending on wells.

The same principle would apply if a water-replenishment assessment were to be established. For example; assume that the water-replenishment assessment was established at $7.50 per acre-foot. If such were the case the cost of producing ground water would increase $7.50 per acre-foot to $27.50. Similarly, the price of water delivered from the surface lines should be increased from $20 to $27.50 per acre-foot. Again the idea is to make the ground water prices and pipe line prices on an equal and competitive basis.

One of the most important ideas behind such a pricing program is the elimination of the requirement of legislation and police action which would otherwise become necessary for the management of the ground water supply. Under the pricing program recommended herein, the replenishment or withdrawals from the underground could be regulated by slight modifications in the pricing structure. Economics rather than legal action would be the controlling factor. No staff would be required to investigate breaches of the law and substantial indirect savings would be accomplished by the elimination of costs connected with legal enforcement and court actions.

The remaining pricing problem would be that of establishing a price for untreated water served by surface canals or pipes to be used for irrigation purposes. The amount of water used and to be used in this manner is and will be relatively small. It would be used only for agricultural purposes, and should be entitled to the same type of agricultural subsidy to be obtained by agricultural interests. A price for this water could be established by the County Water Commission taking into consideration the following factors:

a) Agriculture's ability to pay
b) The cost of substitute methods such as wells
c) The tax structure being paid by residents of the zone of benefit
d) The existence of a water-replenishment assessment, if any

SECTION VIII - FACILITIES TO BE CONSTRUCTED

1. The following facilities should be constructed as soon as possible:

a) First stage of a water purification and treatment plant in the Milpitas area
b) First stage of a distribution line for treated water from the Milpitas area to the Palo Alto and Monta Vista areas

c) Full construction of a distribution line for treated water from the Milpitas area along Piedmont and White Roads to Aborn Road in the Evergreen area
d) A distribution line for untreated water (with two pumping facilities) to carry approximately 25,800 acre-feet per year from the Coyote-Alamitos Canal to the Capitancillos Percolation Ponds, and 30,400 acre-feet per year towards Los Gatos Creek
e) Improvement of the Coyote-Alamitos Canal to a capacity of approximately 104,800 acre-feet per year

2. Upon determination of the economic feasibility by the Bureau of Reclamation of the Pacheco Pass Route, one of the following facilities should be constructed:

a) The improvement of the Coyote Canal from Anderson Reservoir to the Coyote-Alamitos Canal,
b) A conduit from the terminus of the South Bay Aqueduct to the Coyote-Alamitos Canal

3. After determination by the Bureau of Reclamation of the economic feasibility of the Pacheco Pass Route and the terminal delivery point thereof (i.e. at the base of Anderson Dam or in the reservoir itself), a distribution line should be constructed to serve the purposes as set forth in the Morgan Hill project in the report dated July 12, 1960, of the Santa Clara Valley Water Conservation District.

4. Upon determination that State and local health authorities will approve underground recharge by use of reclaimed effluent, a facility should be built for transporting the reclaimed effluent from the San Jose Sewage Plant to Penitencia Creek as set forth in the report to the Santa Clara Valley Water Conservation District dated July 12, 1960.

It is not the purpose of this report to be another discussion of engineering plans. It will be necessary to prepare an engineer's report setting forth engineering plans in detail, including bond retirement schedules to show the tax rates required for facilities proposed for construction. However, some engineering data is included herein, so that a complete plan can be considered. Existing reports on various methods of constructing distribution lines both for treated and percolated water are based on different water demands. To maintain consistency within this report, the planning period and water demand of the Bureau of Reclamation were used to set forth a long-range construction program in order to arrive at the most sensible plan for distributing both treated and percolated water. Consideration was first given to the fact that the Review Board has determined that the cheapest way to distribute water to the North County cities is by extension of the South Bay Aqueduct. Consideration was

also given to the Review Board's finding that one treatment plant for the distribution of purified water would be more economical than several individual plants. The third factor considered was the finding of the Bureau of Reclamation that of the 270,000 acre-feet to be imported by year 2020, 150,000 acre-feet would require treatment and distribution by a surface system. Attention was therefore focused on the best method of distributing 150,000 acre-feet of treated water. Since the cities of Milpitas, Sunnyvale, Mountain View, Palo Alto, Los Altos, Los Altos Hills and Cupertino and the Monta Vista area will require treated water it is a logical conclusion that the single centralized treatment plant should be placed at the terminal of the South Bay Aqueduct where untreated water will be received. Water treated in such a plant would be put to immediate use in the City of Milpitas with frequent turnouts all along the line to the Palo Alto and Monta Vista areas. Studies of the Santa Clara County Flood Control and Water Conservation District indicate that areas which can be economically served from such a line will use, by year 2020, approximately 115,000 acre-feet. It therefore became necessary to determine in what other areas the remaining water which will require surface distribution could be economically distributed. The Review Board's report discloses that the drafts for San Jose, Santa Clara and the municipalities in the southwest portion of the pressure area can be met by recharge in the forebay. No mention is specifically made of the area between Milpitas and Evergreen. This area is on the eastern side of the pressure area and contains the foothills along the eastern side of the north Santa Clara County. Historically the Evergreen area has been short of water. In addition to the water shortage in certain areas of the east side, urban development is now occurring on the hillsides. Existing service of the east side area from a ground water supply has required many wells to be placed in the vicinity of the Coyote Creek with water being pumped up to the areas of development on the hillsides. Findings of the Santa Clara County Flood Control and Water Conservation District indicate that by year 2020 approximately 40,000 acre-feet of water can be economically served from an east side line to the Evergreen area. This area could also be served by use of the central treatment plant in the Milpitas area. Service from such a plant would eliminate all pumping of treated water on the valley floor and should materially reduce pumping costs to the hillside areas. It is for the above reasons that it is recommended that lines be built from Milpitas to Palo Alto and Monta Vista, from Milpitas to the Evergreen area, and that the first stage of a treatment plant be located in the Milpitas area. Tentative location of the treatment plant and the recommended routes for the distribution lines are shown on Plate 2. Estimated costs of the routes considered or recommended are shown on the plates.

In determining the best distribution system for percolated waters, it was necessary to reanalyze all of the existing proposals for such distribution due to the fact that amounts of water to be distributed by percolation from such systems were not based on the findings of the Bureau of Reclamation, to the effect that 120,000 acre-feet of imported water could be percolated in the North County. Records of annual yields of reservoirs in the Coyote, Guadalupe

and Los Gatos watersheds were supplied by the Santa Clara Valley Water Conservation District. Also supplied were percolation capacities of present and future percolation areas of the water conservation district. Using the above data, it was determined that a distribution system capable of percolating 167,700 acre-feet of water annually (47,700 local salvage - 120,000 imported) in the Coyote, Guadalupe and Los Gatos watersheds would be necessary. By determining which percolation ponds could be fed by gravity, a plan for distributing such water which would require a minimum amount of pumping was devised. Such plan with percolation pond capacities is shown on Plate 3. In order to effectuate the plan for percolation, several distribution routes were considered. The recommended route is shown on Plate 2.

Assuming Pacheco Pass water to be the source of percolated water, the recommended plan calls for improving the Coyote Canal to the Coyote-Alamitos Canal to a capacity of 106,300 acre-feet per year. If the South Bay Aqueduct is the source, an east valley pipeline from Milpitas to the Coyote-Alamitos Canal would be used. Either source would require improving the Coyote-Alamitos Canal to a capacity of 104,800 acre-feet per year, installing a pumping facility that would lift 56,200 acre-feet per year against a 44-foot dynamic head, which is a sufficient lift to get water into the Capitancillos Percolation Ponds, and at Capitancillos Percolation Ponds another pumping facility would be installed to lift 30,400 acre-feet against 167 feet of dynamic head so that water could be discharged into Los Gatos Creek and the percolation ponds therein. The recommended plan has the following advantages over the other plans considered.

a) It takes advantage of existing rights of way now owned by the Santa Clara Valley Water Conservation District

b) Until imported water is acquired, no improvements will be necessary in the existing canals

c) After imported water is acquired, the canals could be improved where necessary by enlarging siphons and road crossings. Such facilities could at that time be installed to the capacity of 104,800 acre-feet per year

d) When water purchases are increased to a point where the canal itself could not handle the full capacity, the canal could at that time be improved to the capacity of the siphons

e) Pumping costs are reduced. Other routes require a pump lift of over 250 feet of dynamic head for amounts up to 53,500 acre-feet. The proposed plan lifts the total amount of water (56,200 acre-feet) against the lesser dynamic head of 44 feet. The amount of water which needs to be pumped towards Los Gatos Creek (30,400 acre-feet) is the only amount lifted against

the larger dynamic head of 167 feet.

f) Mileage of the more expensive pipe facilities to be installed is 6.0 miles as compared to pipe mileages up to 18.6 miles on other routes.

g) Initial construction costs are greatly reduced and improvements to the existing canals can be staged as set forth above.

h) Combined construction and annual maintenance and operation costs are less than in the other routes considered

i) There would be no necessity for maintaining a water surface at an elevation of approximately 575 feet in Anderson Reservoir for the plans shown on Plates 24 through 27. This elevation would be necessary to allow that type of plan to function under gravity and eliminate pumping costs into Anderson Reservoir. The recommended plan would allow for the emptying of Anderson Reservoir each year if desired. By lowering the water surface in Anderson Reservoir, substantial evaporation losses would be eliminated and greater storage would be available for flood control purposes at the beginning of each winter season

Facilities recommended for immediate construction can be put to both immediate and ultimate use without waiting for a final determination of the Bureau of Reclamation relative to the economic feasibility or the terminal point of the Pacheco Pass Route. They are also the facilities that are the most economical to construct irrespective of importation route.

Staged construction of the distribution line to the Palo Alto and Monta Vista areas is recommended because such construction will result in a cheaper cost per acre-foot. Capital costs on staged construction are greater than under full construction. However, each stage can be financed over a shorter period with a resulting saving in interest costs. Pipe sizes in most areas of this line would be fairly large if built to its full capacity. During the early years there would be wasted unused capacity on which interest would be paid.

The recommended line to Evergreen, as compared with the line to Palo Alto and Monta Vista, is more economically financed by constructing it to its full capacity and financing it over a longer period of years. This is true because the line is basically of smaller pipe sizes and relatively small increases in pipe size over that for stage construction result in full capacity pipes at only a slight increase of initial cost.

From the above analysis came the recommendation for immediate construction of the first stage of a pipe line to Palo Alto and Monta Vista, first stage of the water treatment plant, full construction of a pipe line to the

Evergreen area, construction of the pumping facilities and pipe lines from the end of the Coyote-Alamitos Canal to Los Gatos Creek, and the ultimate improvement of the Alamitos Canal itself. Plans recommended for immediate construction are shown on Plate 2.

The improvement of the Coyote Canal from Anderson Reservoir to the Coyote-Alamitos Canal should be delayed until the determination of the economic feasibility by the Bureau of Reclamation of the Pacheco Pass Route. If, because of federal subsidization, water for percolation purposes can be purchased more economically from the Bureau of Reclamation, then the Coyote Canal should be improved. If at that time the Pacheco Pass Route proves to be economically unfeasible or even if feasible and San Benito or Santa Cruz Counties are not financially able to contribute their share of costs for a Pacheco Pass facility, it may become necessary to construct the conduit recommended in the report of the Review Board from the terminal of the South Bay Aqueduct. By terminating such conduit at the Coyote-Alamitos Canal instead of at elevation of 350 feet on Coyote Creek, costs of such a conduit could be substantially reduced from the costs used by the Review Board in making their comparative analysis of Pacheco Pass and South Bay Aqueduct. These two alternates are shown on Plate 4.

The pipe line proposed as the Morgan Hill Project in the July 12, 1960 report of the Santa Clara Valley Water Conservation District should await determination by the Bureau of Reclamation of the Pacheco Pass Project and the terminal delivery point thereof. If the economically feasible terminal delivery point is in the reservoir itself, the project as proposed would certainly be proper. However, if the Pacheco Pass report of the Bureau of Reclamation recommends construction of a pipe line or canal through the area to be served by the Morgan Hill project such area could be directly served by the Pacheco Pass Project. Therefore, any project built locally to serve the area in question should be sized and located in such a manner that it would fit in to, or be a part of, the Pacheco Pass importation route. By awaiting the report of the Bureau of Reclamation the possible danger of double expenditure of public funds would be eliminated.

The pipe line proposed as the Berryessa Percolation Project in the July 12, 1960 report of the Santa Clara Valley Water Conservation District needs further determination. As pointed out by the Review Board, the use of reclaimed effluent is the cheapest source of water. This water could be used for percolation purposes into Penitencia Creek, as set forth in the report to the Santa Clara Valley Water Conservation District. A study made by the Santa Clara County Flood Control and Water Conservation District has determined that imported water could be transported from the terminus of the South Bay Aqueduct to Penitencia Creek in amounts of 15,000 acre-feet per year for an average cost of about $1.82 per acre-foot. However, to this cost must be added the cost of importing the water. The importation costs alone are higher by far than the costs of transporting and pumping the reclaimed effluent. The logical result

therefore, is that the use of reclaimed effluent should not be discouraged. However, before funds are expended for the construction of such a facility, it should be determined that State and local health authorities would approve the underground recharge by such a method. It is therefore recommended that construction of such a facility be delayed until such approval is given. If the use of reclaimed effluent for percolation purposes will not be permitted, then the portion of the line to Evergreen from Milpitas to Penitencia Creek could be built as a double conduit with one conduit used for percolation purposes. When municipal and industrial demand requires the use of such pipeline, further consideration could be given to the way in which water would be supplied to the Penitencia Percolation Ponds.

The Morgan Hill and Berryessa Projects are shown on Plate 4. A line from the South Bay Aqueduct for percolating 15,000 or 20,000 acre-feet per year in Penitencia Creek is shown on Plate 7. Other routes considered which led to the final recommendation are shown on Plates 5 through 30.

SECTION IX - CONSTRUCTION, OPERATION AND MAINTENANCE

1. The Santa Clara Valley Water Conservation District, and the South Santa Clara Valley Water Conservation District should be responsible for the maintenance and operation of all existing water distribution facilities used for percolation and irrigation purposes within their respective areas.

2. The Santa Clara County Flood Control and Water Conservation District should be responsible for the construction, maintenance and operation of all new wholesale distribution facilities and water treatment plants.

Recommendations on these matters are almost self-explanatory. The purpose behind the recommendations is to create a division of responsibility and authority in those areas where division is proper. Under previous recommendations, the Board of Supervisors would hold bond elections for all new facilities. It would follow that the Board would be responsible for the expenditure of bond funds for the construction of new facilities. This responsibility would not prevent contractual relationships between the Board and other water agencies relating to maintenance and operation by such other agencies of the facilities to be constructed within areas where there is common responsibility by the Board and such agency to the same people.

SECTION X - SOUTH COUNTY

1. When the South County receives benefit from a source of imported water the area of benefit within the South County should be annexed to the North County zone of benefit so that the same procedures and practices will apply in all areas of the County benefited by a water program.

The South County is now providing its own local water salvage program through the works constructed by the South Santa Clara Valley Water Conservation District. As pointed out in the report of the Review Board, present water supplies in the South County are sufficient for some years to come. Residents in the South County are now paying for their local water costs and would not receive any direct benefit from transporting water into the North County by the South Bay Aqueduct. The earliest conceivable time for the South County to benefit from a water importation program would be when water is imported through the Pacheco Pass Route. When imported water becomes available to the South County and all areas of the County will be obtaining water both from local sources and imported sources, there would seem to be little value in keeping separate water systems in the North County and South County . By annexing the area into the zone of benefit of the North County the South County could share the wealth of assessed valuation to be found in the North County and the North County would share in the revenues derived from any water-replenishment assessment which might be adopted in the South County.

SECTION XI - CONCLUSION

The recommendations and discussions set forth above point out the major problems to be solved and the complexities of the Santa Clara County water problem. The recommendations are based on the theory that water is water whether such water is directly percolated without being stored in reservoirs at no cost to anyone, whether it be stored in reservoirs and later percolated resulting in a payment by local interests for the construction of a storage facility, or whether it be imported water with payments being made by local people for the importation and distribution facilities. Water is water - nothing more or less. All sources, whether local or imported should be pooled for use in the zone of benefit. Similarly, all revenues whether from sales of water, taxes, or water-replenishment assessments should be pooled and applied to the costs of the water program.

Complex as the water problem may be in Santa Clara County, the above recommendations and the reasons therefor, do provide answers to all of these major problems and set forth a step-by-step plan of attack that can, with cooperative and united action of all cities and water agencies involved, bring a solution to the problem in Santa Clara County. No new agency need be created. Existing agencies can do the job. The plan proposed herein is one whereby all of the various political entities interested in the water program of Santa Clara County can retain their own political identities and continue in their existing operations. For the good of the County as a whole, all of such agencies must get together and concentrate all of their efforts. This is accomplished by having each agency subject itself to the review of the recommended Water Commission upon which each agency, except the Board of Supervisors, will have representation. The proposed program can be started without any immediate or controversial legislative amendments. Existing legislation is available to accomplish practically all of the purposes set forth in the recommendations.

It should be repeated that time is of the essence. Imported water can be delivered into Santa Clara County in approximately four years. It will take that period of time to properly study, design, construct and have ready for operation, a water treatment plant in the vicinity of Milpitas. Action cannot be delayed. Existing local agencies can do the job now. The will to cooperate must be demonstrated by all of the water agencies and water users in Santa Clara County. This report provides a guide to this necessary cooperation.

It is urgently recommended that the following initial steps be taken within the following tentative time schedule.

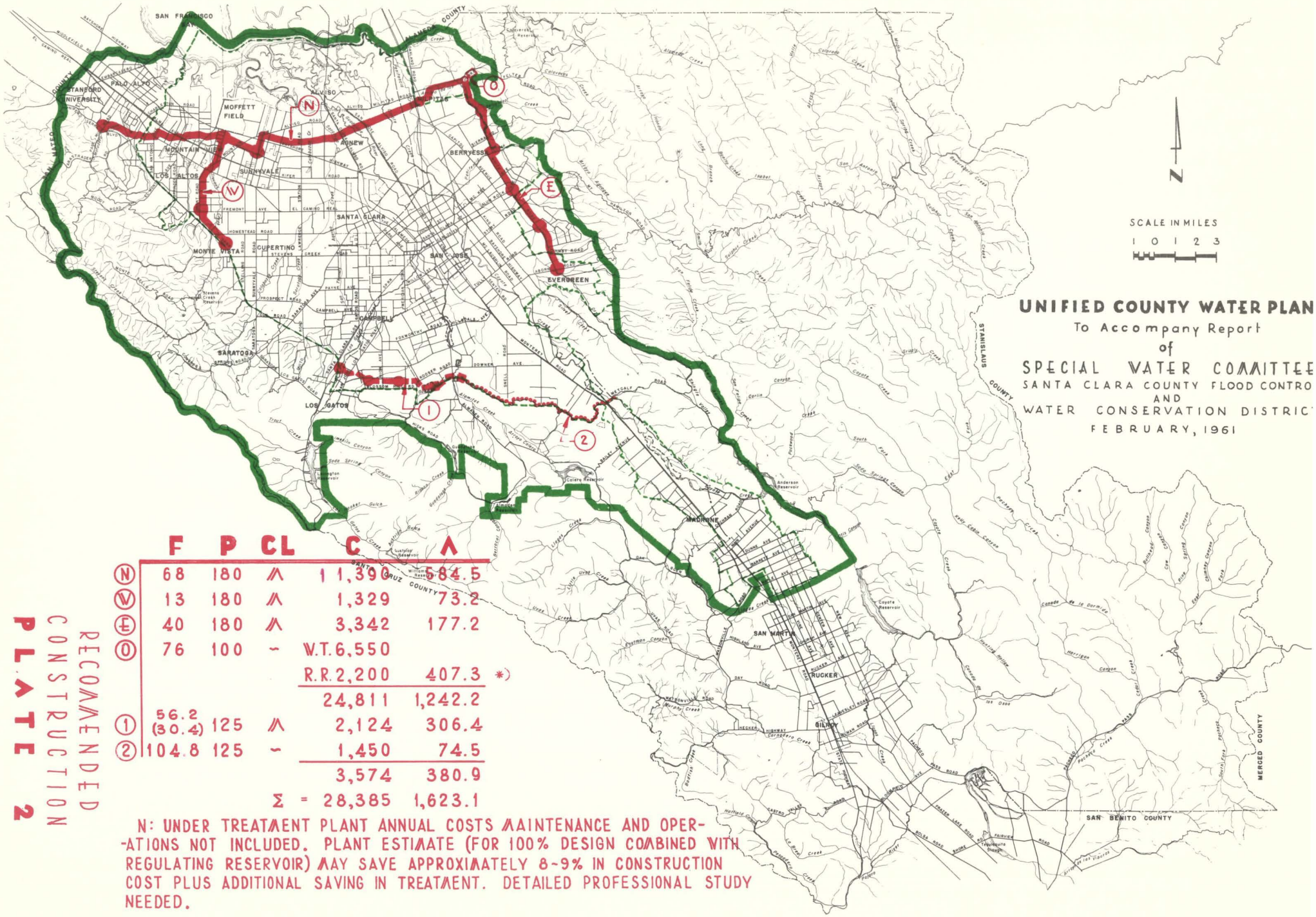
1. Adopt this report as to principle and policy now
2. Complete negotiations with the State on the South Bay Aqueduct by September 1961
3. Engage an engineering firm for treatment plant design and consulting service by February 23, 1961
4. Form a zone of benefit and appoint the Water Commission by March 31, 1961
5. Augment the wholesale water division of the Santa Clara County Flood Control and Water Conservation District by August 1, 1961
6. Take all other steps necessary to implement the program for financing and bond election purposes by December 15, 1961

PLATE LEGEND

C	CONSTRUCTION COST IN $ 1000
A	ANNUAL COSTS IN $ 1000
F	FLOW IN 1000 ACRE FEET (ANNUAL)
P	DESIGN, PERCENTAGE OF AVERAGE ANNUAL FLOW
CL	CLASS (PIPE)
G	GRADIENT DESIGN (FOR PIPE CLASS)
M	MAXIMUM HEAD DESIGN (FOR PIPE CLASS)
R/W	RIGHT OF WAY
PEC. 12	PERCOLATION CAPACITY 12,000 ACRE FEET (ANNUAL)
Y10	YIELD 10,000 ACRE FEET (ANNUAL)
Σ	NOT INCLUDED
Σ	TOTAL
N	NOTE

10	FLOW, 10,000 ACRE FEET (ANNUAL)
—·—	CANAL
·····	CANAL IMPROVEMENT
———	PIPELINE, GRAVITY FLOW
– – –	PIPELINE, PUMP LIFT
□	W.T. - WATER TREATMENT PLANT
○	R.R. - REGULATING RESERVOIR
■	P.S. - PUMPING STATION
●	TURNOUT - T.O.
[– – –]	PERCOLATION POND, BED

UNIFIED COUNTY WATER PLAN
To Accompany Report
of
SPECIAL WATER COMMITTEE
SANTA CLARA COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
FEBRUARY, 1961
SCALE IN MILES
1 0 1 2 3
N
LEGEND
SANTA CLARA VALLEY
WATER CONSERVATION DISTRICT
SANTA CLARA COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
SOUTH SANTA CLARA VALLEY
WATER CONSERVATION DISTRICT
ZONE OF BENEFIT
ZONE AND DISTRICT
BOUNDARIES
PLATE I
SAN FRANCISCO BAY
ALAMEDA COUNTY
SAN MATEO COUNTY
STANISLAUS COUNTY
SANTA CRUZ COUNTY
SAN BENITO COUNTY
MERCED COUNTY
PALO ALTO
STANFORD UNIVERSITY
MOFFETT FIELD
MOUNTAIN VIEW
LOS ALTOS
SUNNYVALE
ALVISO
MILPITAS
BERRYESSA
BONEW
SANTA CLARA
CUPERTINO
MONTE VISTA
SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MORGAN HILL
GILROY
HOLLISTER
SAN MARTIN
CHITTENDEN
RUCKER

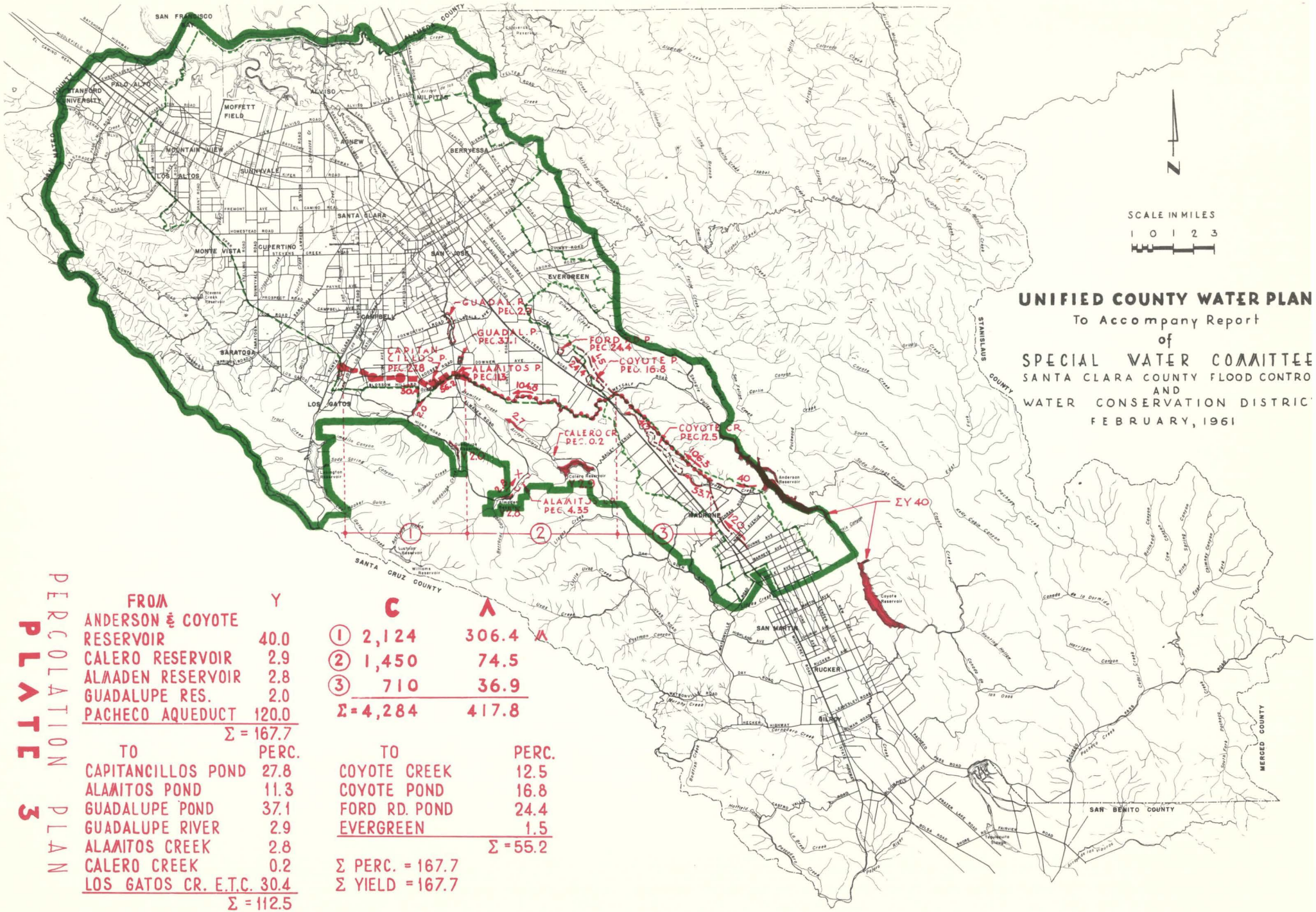


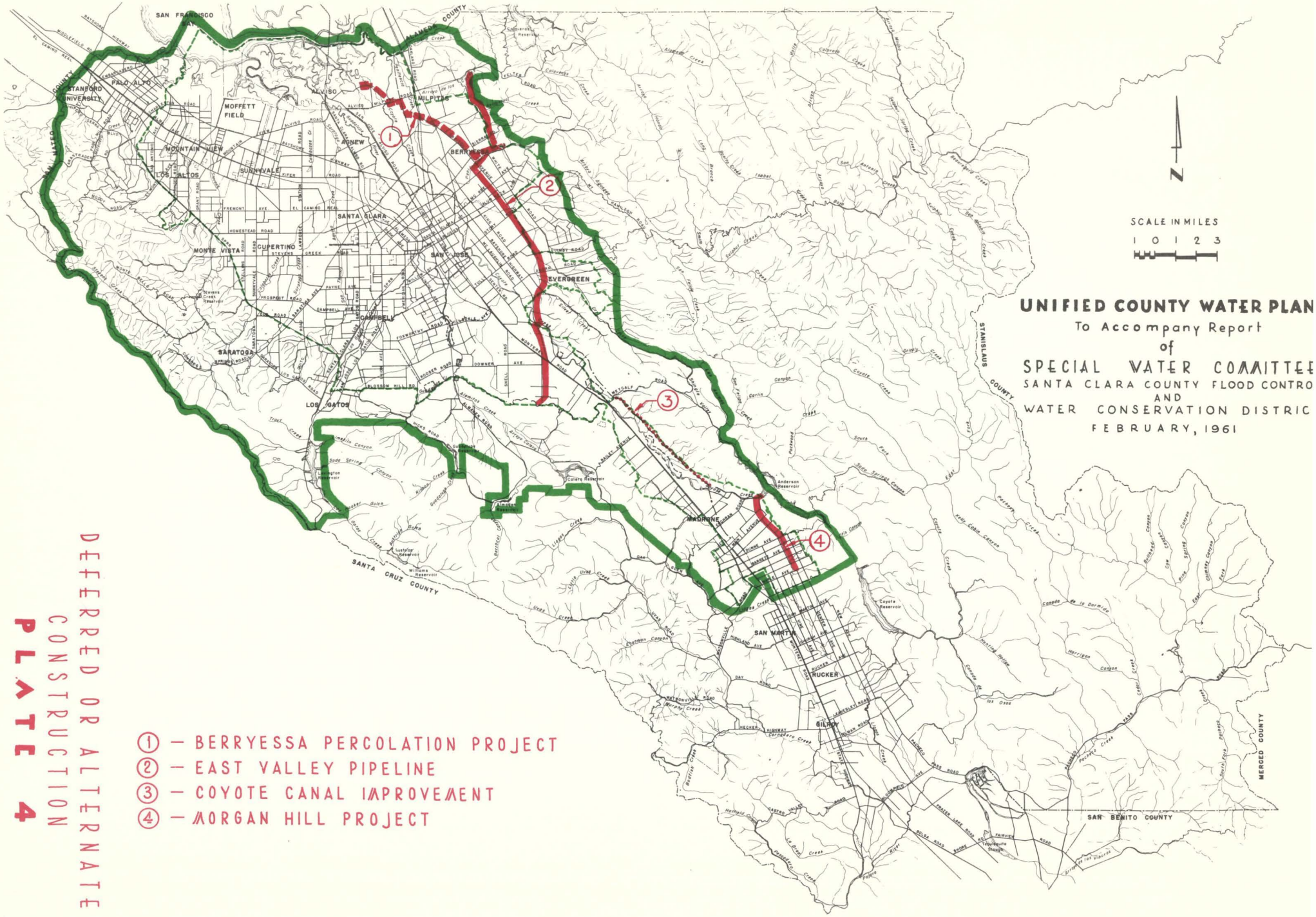
	F	P	CL	C	A
N	68	180	⋀	11,390	584.5
V	13	180	⋀	1,329	73.2
E	40	180	⋀	3,342	177.2
O	76	100	~	W.T. 6,550	
				R.R. 2,200	407.3 *)
				24,811	1,242.2
1	56.2 (30.4)	125	⋀	2,124	306.4
2	104.8	125	~	1,450	74.5
				3,574	380.9
			Σ =	28,385	1,623.1

N: UNDER TREATMENT PLANT ANNUAL COSTS MAINTENANCE AND OPERATIONS NOT INCLUDED. PLANT ESTIMATE (FOR 100% DESIGN COMBINED WITH REGULATING RESERVOIR) MAY SAVE APPROXIMATELY 8-9% IN CONSTRUCTION COST PLUS ADDITIONAL SAVING IN TREATMENT. DETAILED PROFESSIONAL STUDY NEEDED.

RECOMMENDED CONSTRUCTION

PLATE 2


UNIFIED COUNTY WATER PLAN
To Accompany Report
of
SPECIAL WATER COMMITTEE
SANTA CLARA COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
FEBRUARY, 1961
SCALE IN MILES
1 0 1 2 3
N
SAN FRANCISCO
ALAMEDA COUNTY
STANFORD UNIVERSITY
PALO ALTO
MOFFETT FIELD
ALVISO
MILPITAS
MOUNTAIN VIEW
LOS ALTOS
SUNNYVALE
AGNEW
BERRYESSA
SANTA CLARA
CUPERTINO
MONTE VISTA
SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
GUADAL. P. PEC. 2.9
GUADAL. P. PEC. 37.1
CAPITAN CILLOS P. PEC. 27.8
ALAMITOS P. PEC. 11.3
FORD P. PEC. 24.4
COYOTE P. PEC. 16.8
COYOTE CR. PEC. 12.5
CALERO CR. PEC. 0.2
ALAMITOS PEC. 4.35
ΣY 40
MADRONE
SAN MARTIN
RUCKER
GILROY
SANTA CRUZ COUNTY
STANISLAUS COUNTY
MERCED COUNTY
SAN BENITO COUNTY
Anderson Reservoir
Coyote Reservoir
Calero Reservoir
Lexington Reservoir
Lexington Reservoir
Williams Reservoir
Lexington Reservoir
Almaden Reservoir
Guadalupe Reservoir
Los Gatos Reservoir
Vasona Reservoir
Stevens Creek Reservoir
Pacheco Reservoir
Hecker Reservoir
Fairview Reservoir
Pacheco State Park
Canada de la Dormida
Los Osos
Harrigan Canyon
Pacheco Creek
Pacheco Pass
Pacheco Pass Road
Hollister
Aromas
Watsonville Road
Murphy Creek
Hecker
Hwy 152
Carnadero Creek
Bolsa Road
Fairview Road
Frazier Lake Road
Fairview
Aromas
Hollister Grade
Castro Valley
Pescadero Creek
Pescadero Creek Road
Bolsa Road
Aromas
Frazier Lake Road
Fairview Road
Fairview
Pacheco State Park
Pacheco Pass
Pacheco Creek
Los Osos
Canada de la Dormida
Harrigan Canyon
Pacheco Pass Road
Pacheco Creek
Pacheco Pass
Santa Ana Creek
Pacheco Pass
Pacheco Creek
Pacheco Pass Road
Pacheco Pass
Pacheco Creek
Pacheco Pass
Pacheco Creek
Pacheco Pass
Pacheco Creek


UNIFIED COUNTY WATER PLAN
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SANTA CLARA COUNTY FLOOD CONTROL
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FEBRUARY, 1961
SCALE IN MILES
1 0 1 2 3
N
SAN FRANCISCO BAY
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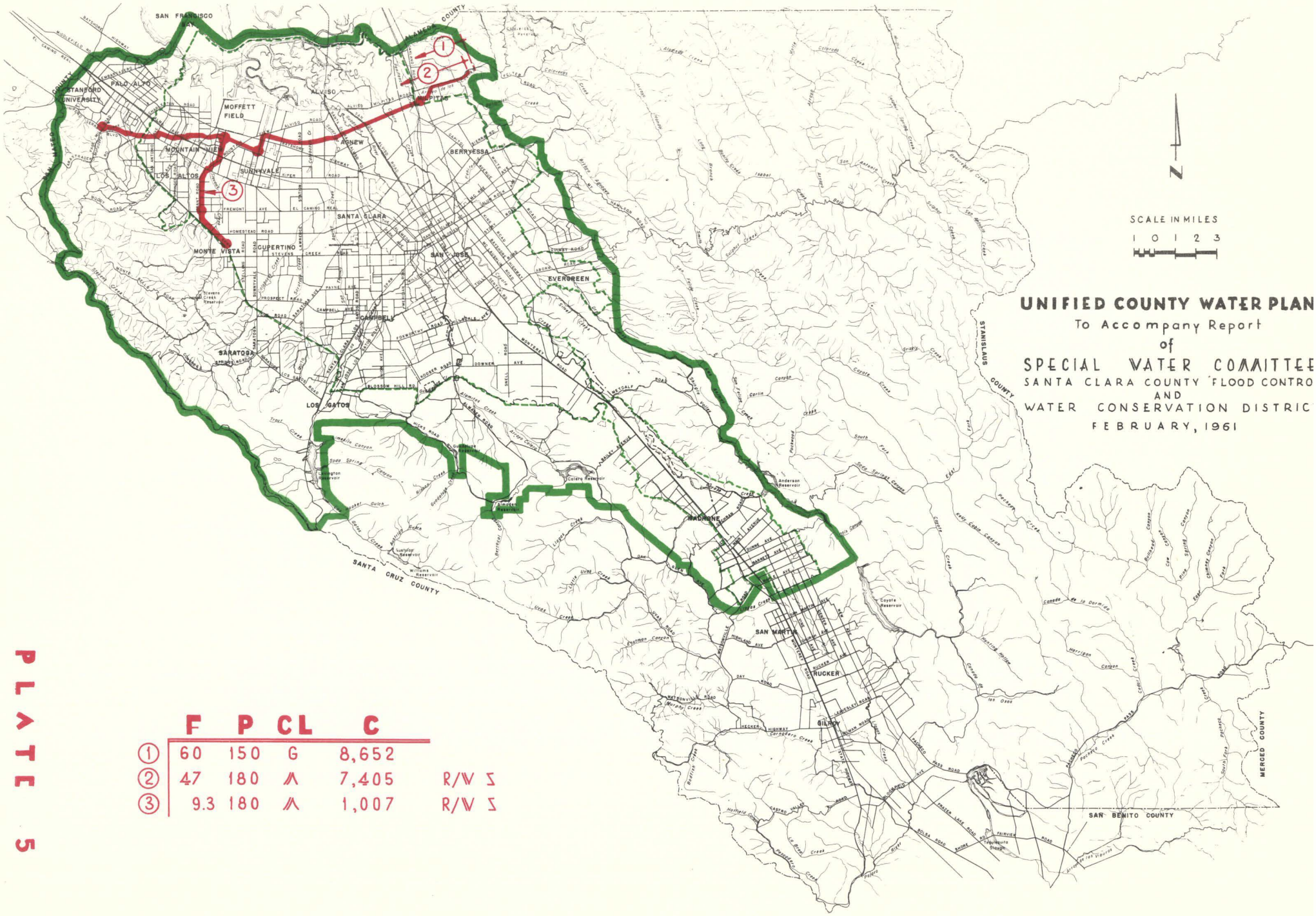
CUPERTINO
MONTE VISTA
SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
SANTA CRUZ COUNTY
SAN BENITO COUNTY
MERCED COUNTY
STANISLAUS COUNTY
1 — BERRYESSA PERCOLATION PROJECT
2 — EAST VALLEY PIPELINE
3 — COYOTE CANAL IMPROVEMENT
4 — MORGAN HILL PROJECT
DEFERRED OR ALTERNATE CONSTRUCTION
PLATE 4

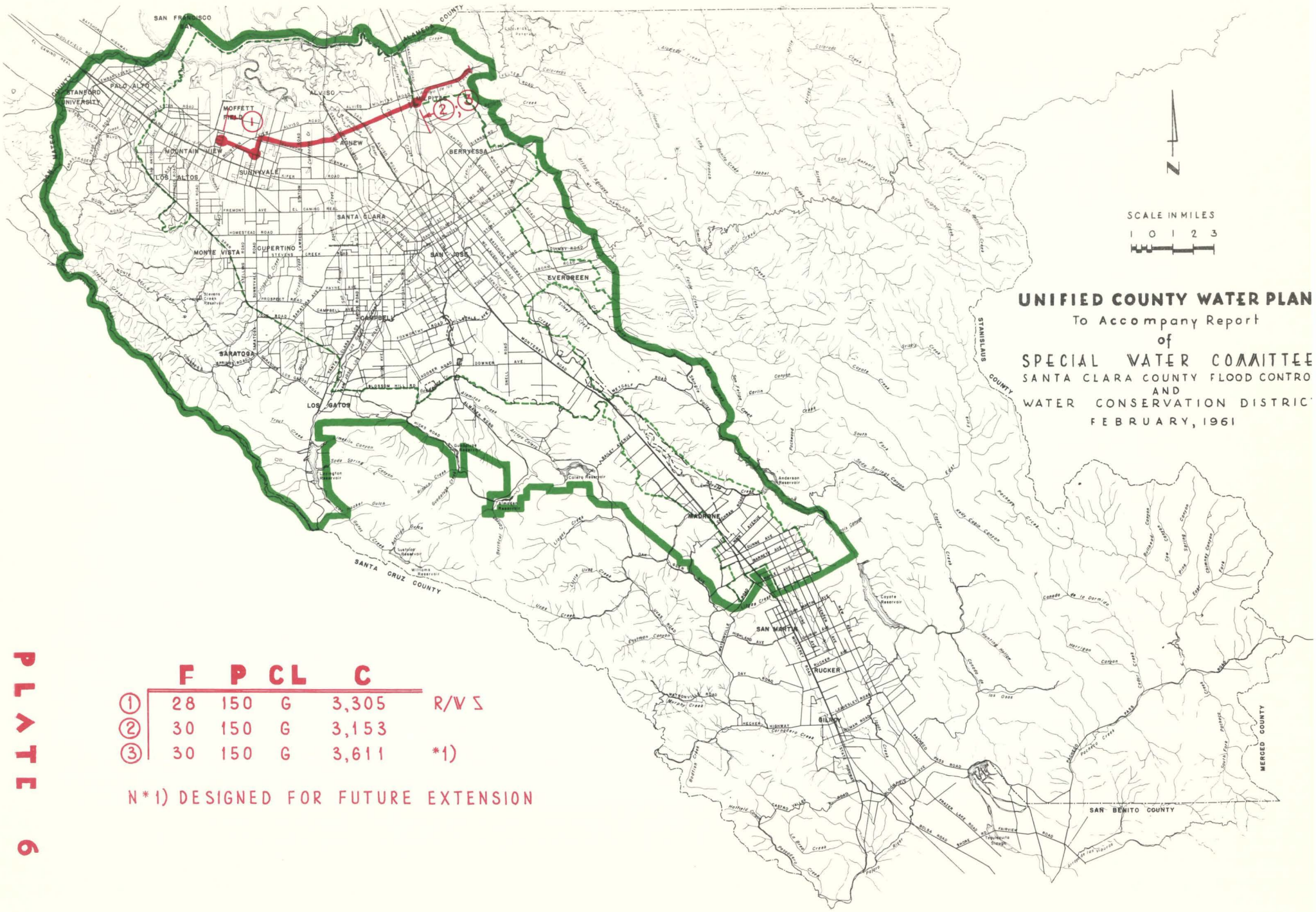
SPECIAL EXPLANATION - Plates 5 through 30

The following plates show studies which led to the final recommendation for routes shown on Plate 2. Some of the studies were purely experimental and were made prior to announcement by the Bureau of Reclamation of the water demand for Santa Clara County. Some, therefore, are not consistent with the Bureau's conclusion, but provided sufficient information to eliminate need for further present study. They may provide a basis for consideration of other alternates if percolation of reclaimed effluent is not permitted or for future works required by ever-changing conditions.



	F	P	CL	C	
1	60	150	G	8,652	
2	47	180	⅄	7,405	R/W ⅄
3	9.3	180	⅄	1,007	R/W ⅄

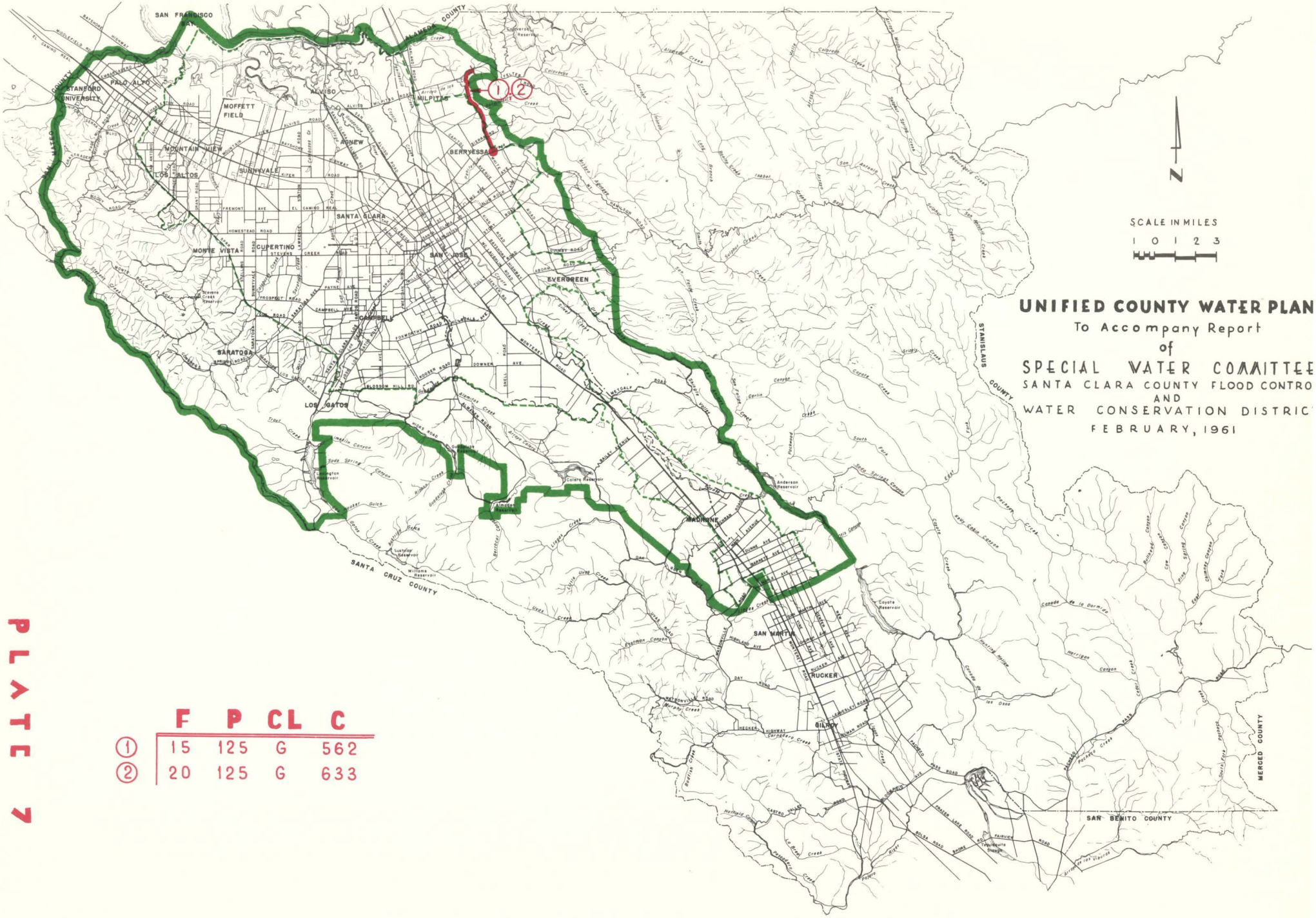
PLATE 5



	F	P	CL	C	
1	28	150	G	3,305	R/W ≤
2	30	150	G	3,153	
3	30	150	G	3,611	*1)

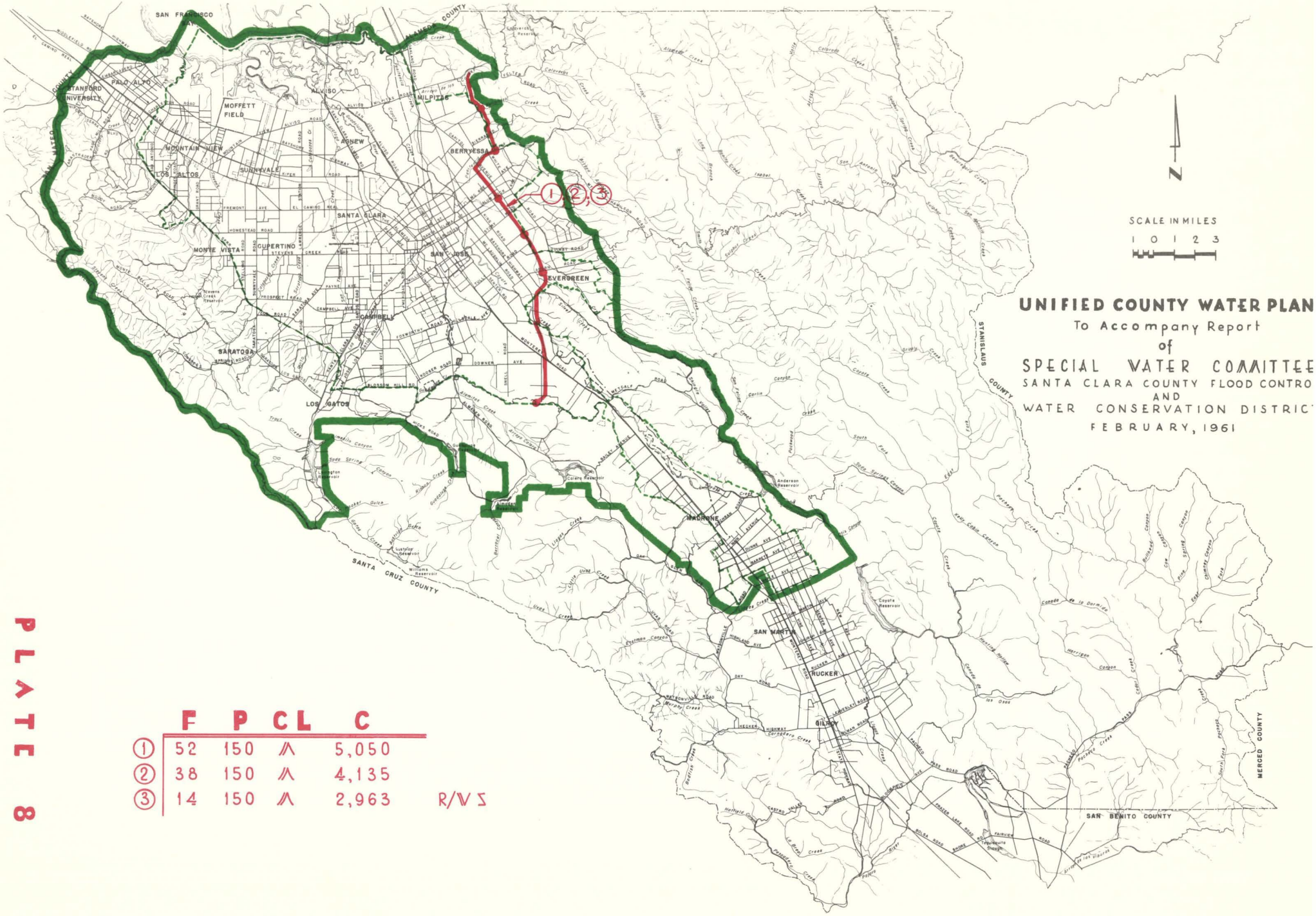
N*1) DESIGNED FOR FUTURE EXTENSION

PLATE 6



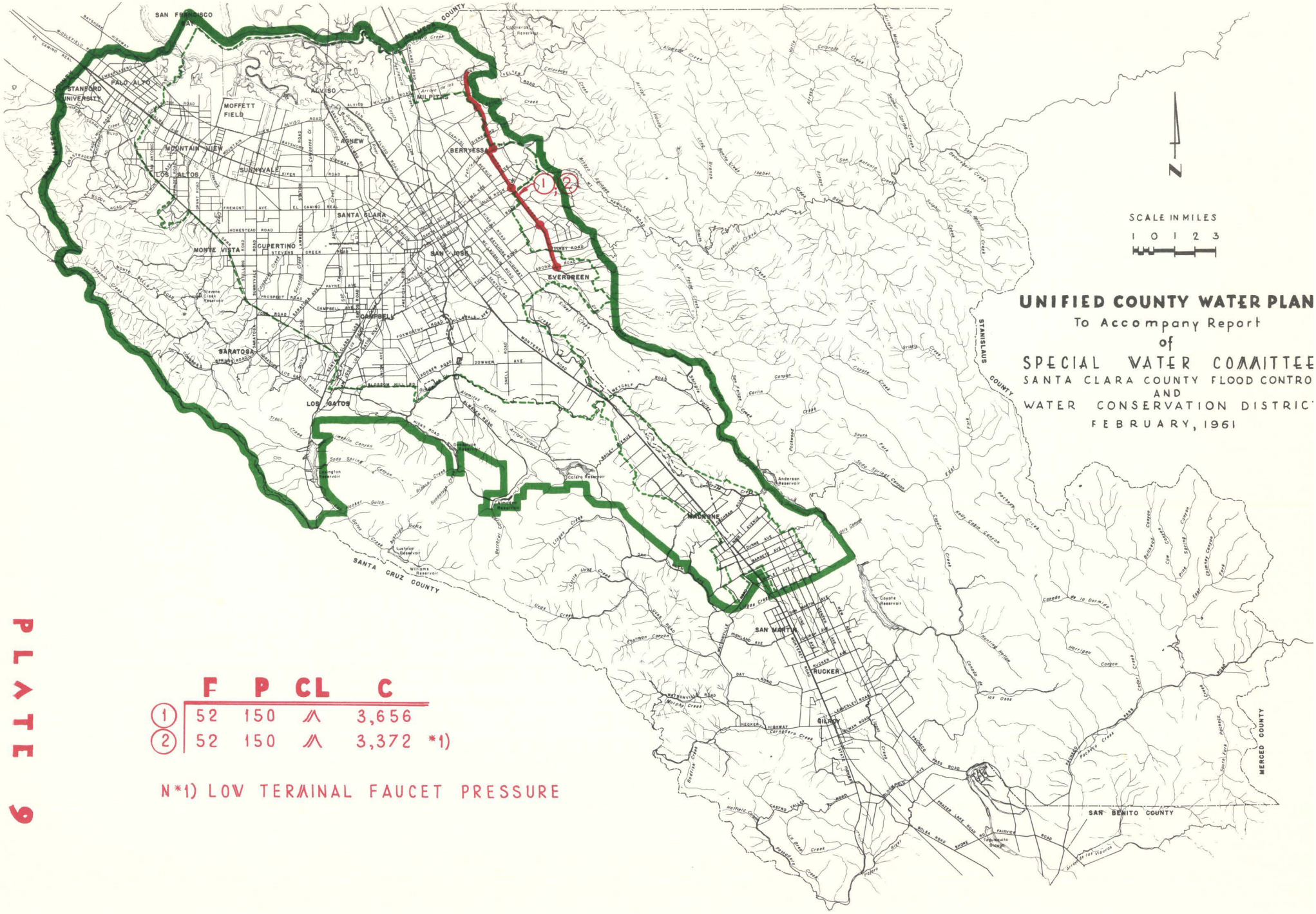
	F	P	CL	C
1	15	125	G	562
2	20	125	G	633

PLATE 7



	F	P	CL	C	
1	52	150	⅄	5,050	
2	38	150	⅄	4,135	
3	14	150	⅄	2,963	R/V S

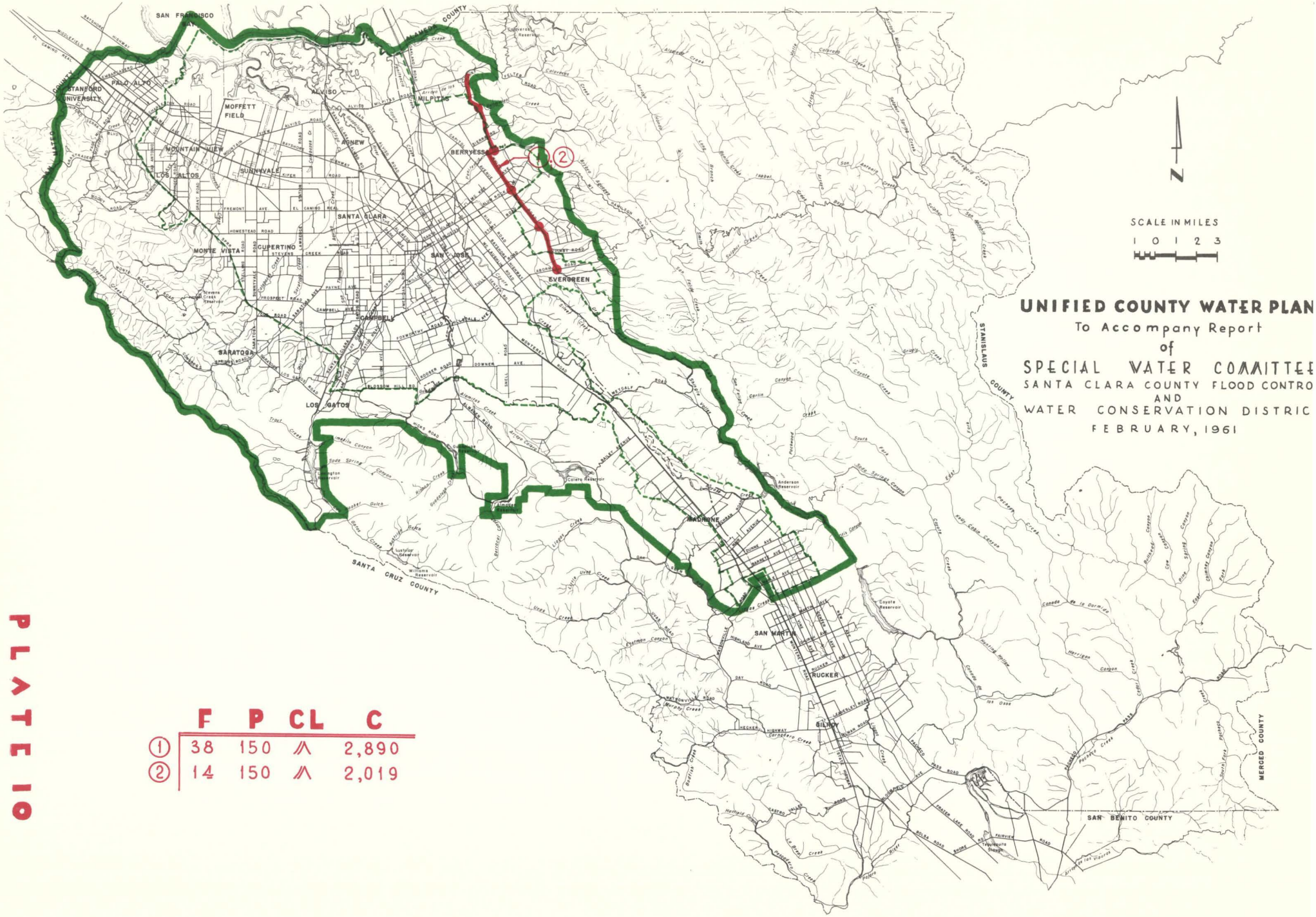
PLATE 8

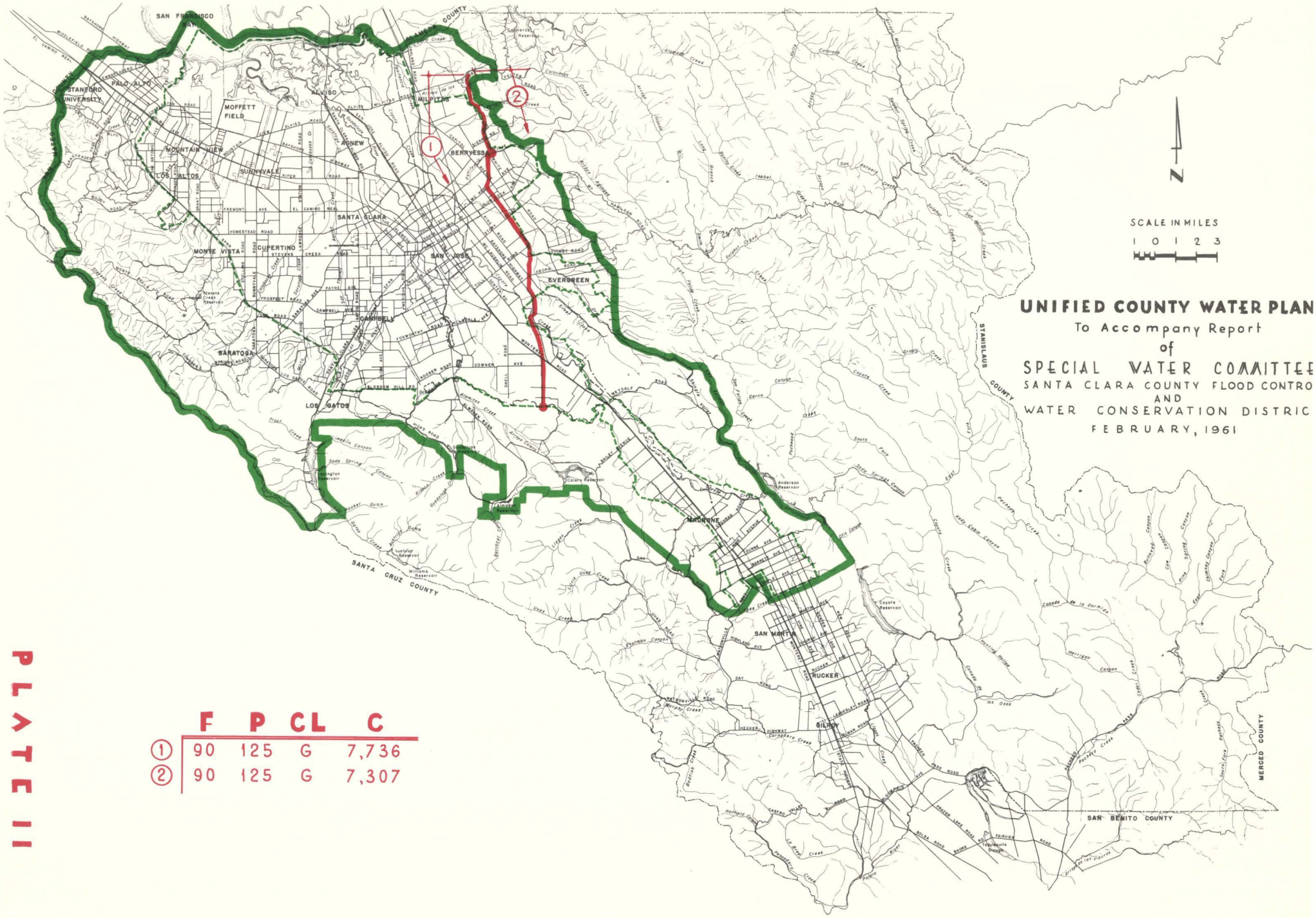


	F	P	CL	C	
1	52	150	⋀⋀	3,656	
2	52	150	⋀⋀	3,372	*1)

N*1) LOW TERMINAL FAUCET PRESSURE

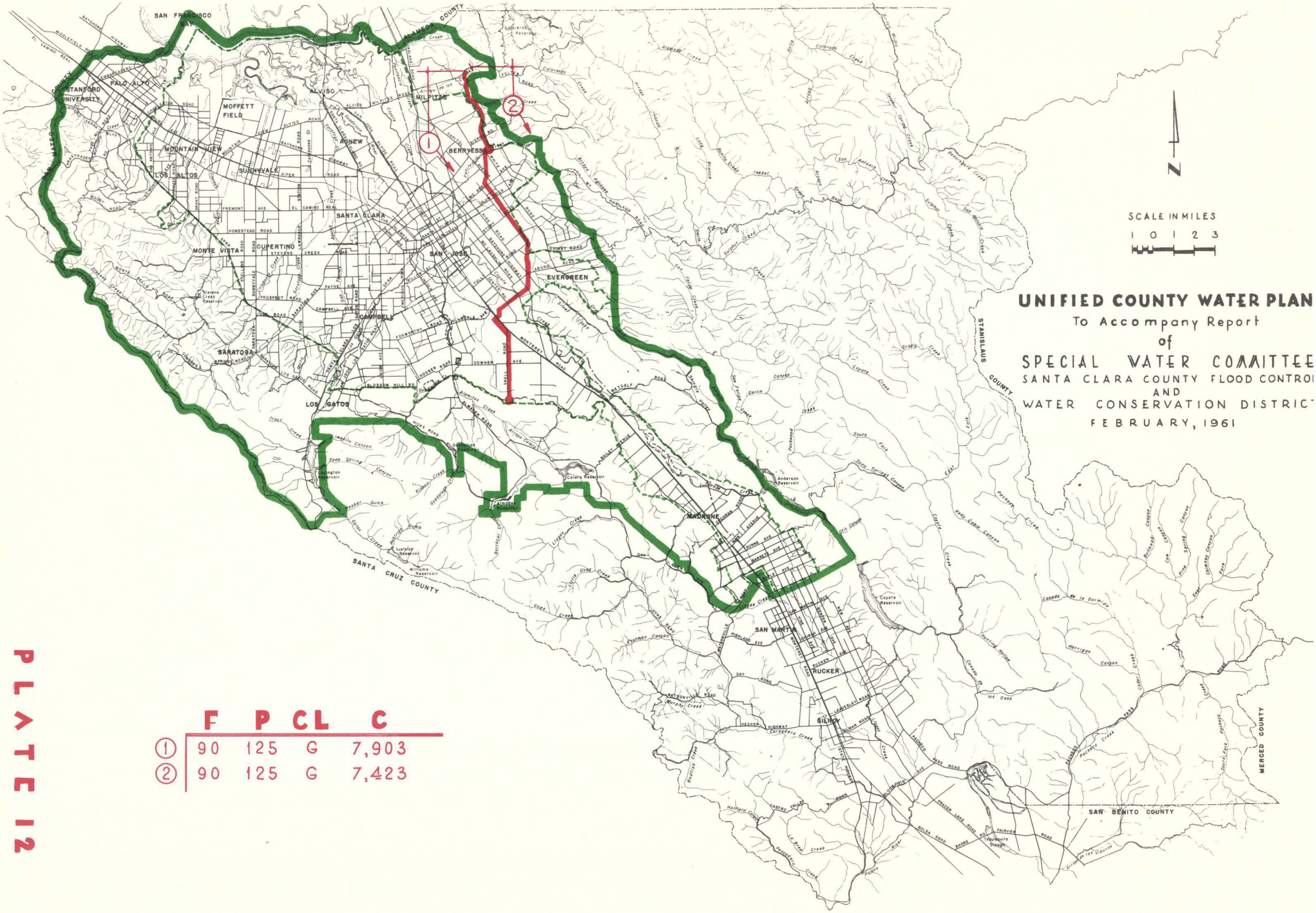
PLATE 9


UNIFIED COUNTY WATER PLAN
To Accompany Report
of
SPECIAL WATER COMMITTEE
SANTA CLARA COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
FEBRUARY, 1961
SCALE IN MILES
1 0 1 2 3
N
SAN FRANCISCO BAY
STANFORD UNIVERSITY
PALO ALTO
MOFFETT FIELD
ALVISO
MILPITAS
MOUNTAIN VIEW
LOS ALTOS
SUNNYVALE
AGNEW
BERRYESSA
SANTA CLARA
CUPERTINO
MONTE VISTA
SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
ALAMEDA COUNTY
SANTA CRUZ COUNTY
STANISLAUS COUNTY
MERCED COUNTY
SAN BENITO COUNTY
PLATE 10
F P CL C
1 38 150 ⅄ 2,890
2 14 150 ⅄ 2,019



	F	P	CL	C
1	90	125	G	7,736
2	90	125	G	7,307

PLATE II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ALAMEDA COUNTY
STANISLAUS COUNTY
MERCED COUNTY
SAN BENITO COUNTY
SANTA CRUZ COUNTY
STANFORD UNIVERSITY
PALO ALTO
MOFFETT FIELD
ALVISO
MILPITAS
BERRYESSA
MOUNTAIN VIEW
LOS ALTOS
SUNNYVALE
AGNEW
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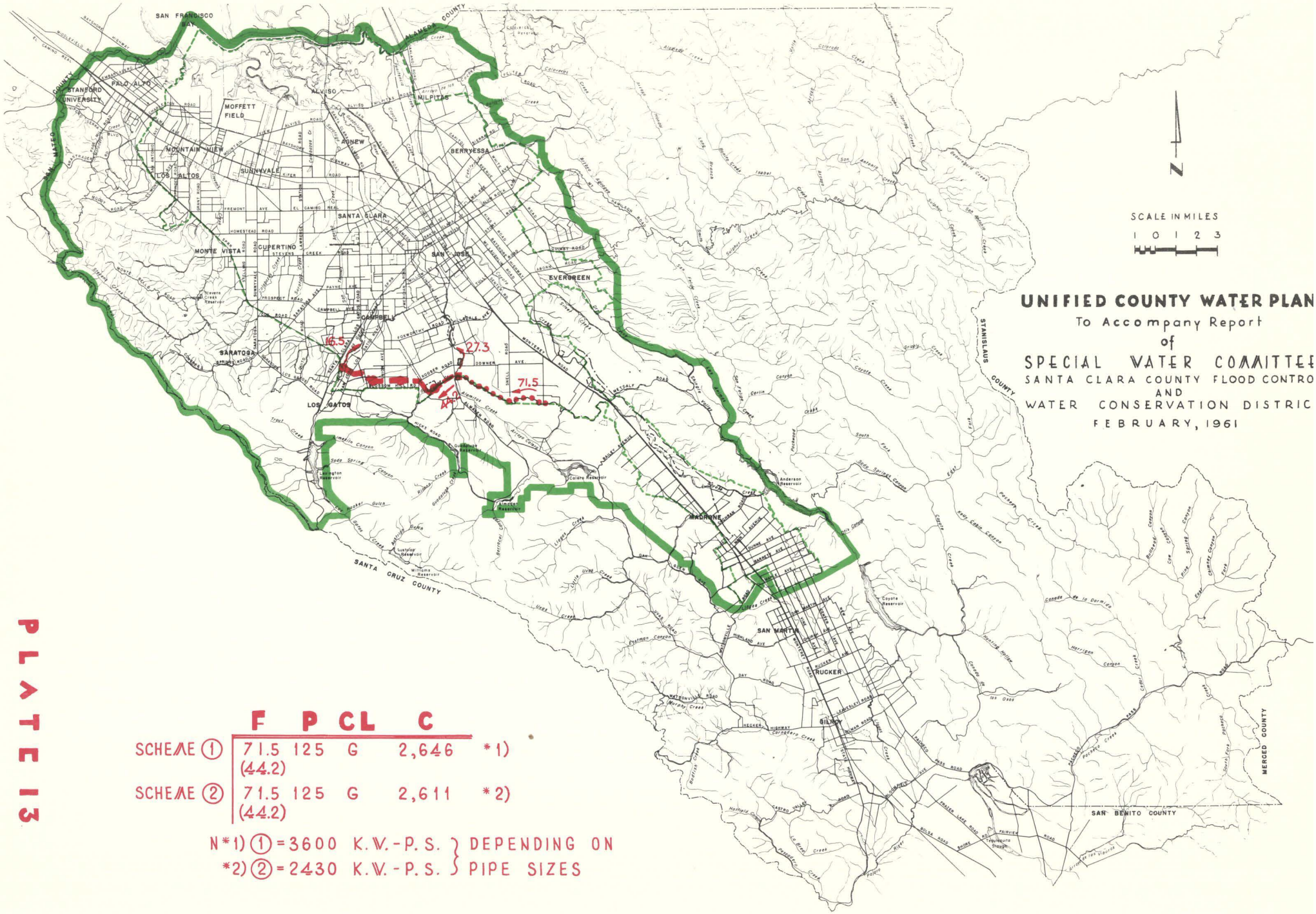
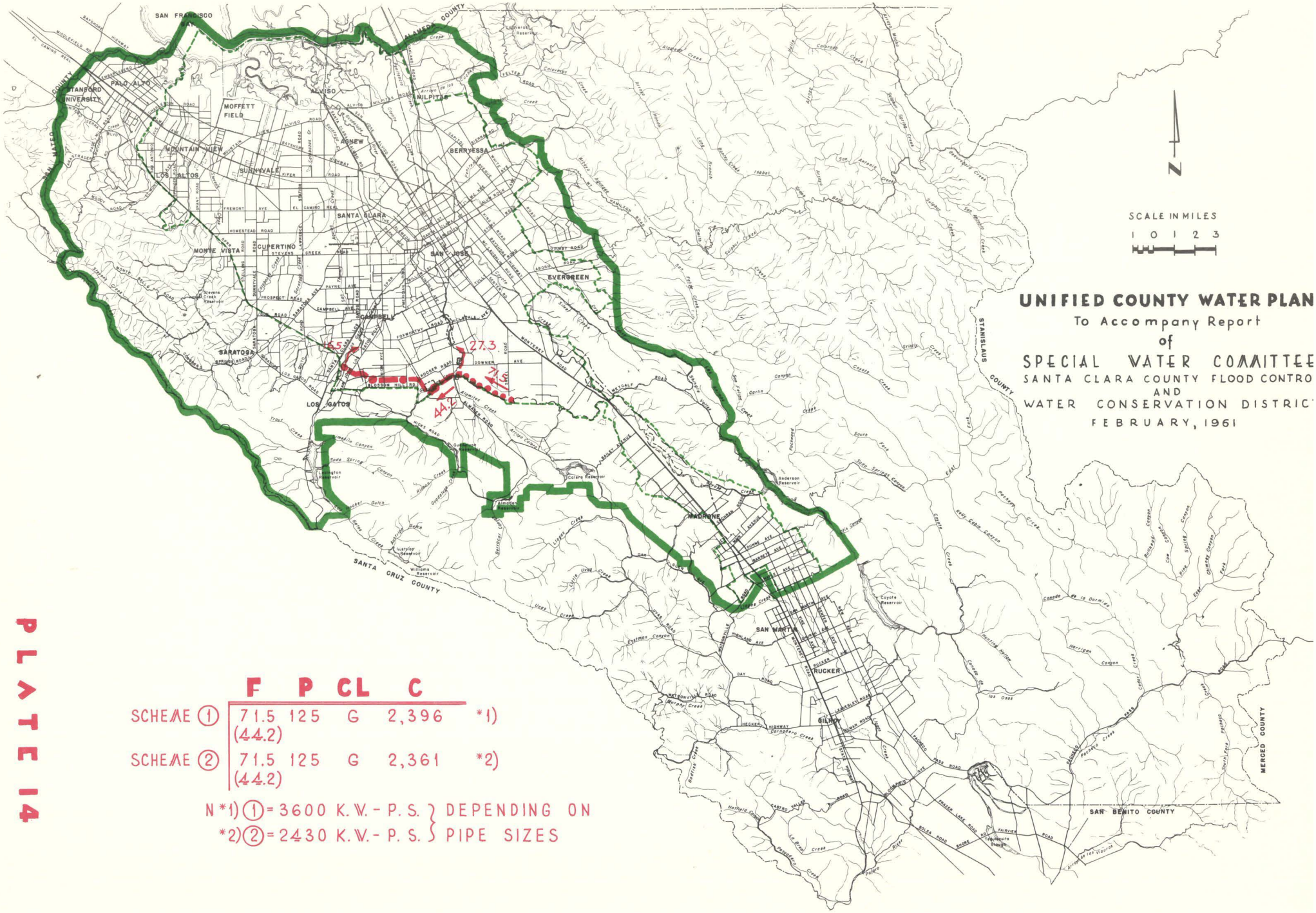
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
Anderson Reservoir
Coyote Reservoir
Calero Reservoir
Almaden Reservoir
Lexington Reservoir
Lenzen Reservoir
Stevens Creek Reservoir
Williams Reservoir
Coyote Creek
Guadalupe Creek
Los Gatos Creek
Alamitos Creek
Calera Creek
Llagas Creek
Pacheco Creek
Tequisquita Slough
Canada de la Garmina
Harrigan Canyon
Cerro Creek
Fisher Lake
Fairview
Bolsa Road
Rucker
Highway 152
Highway 101
Highway 17
Highway 9
Highway 130
Highway 25
Highway 156
Highway 152
Highway 129
Highway 146
Highway 156



	F	P	CL	C	
SCHEME ①	71.5 (44.2)	125	G	2,646	*1)
SCHEME ②	71.5 (44.2)	125	G	2,611	*2)

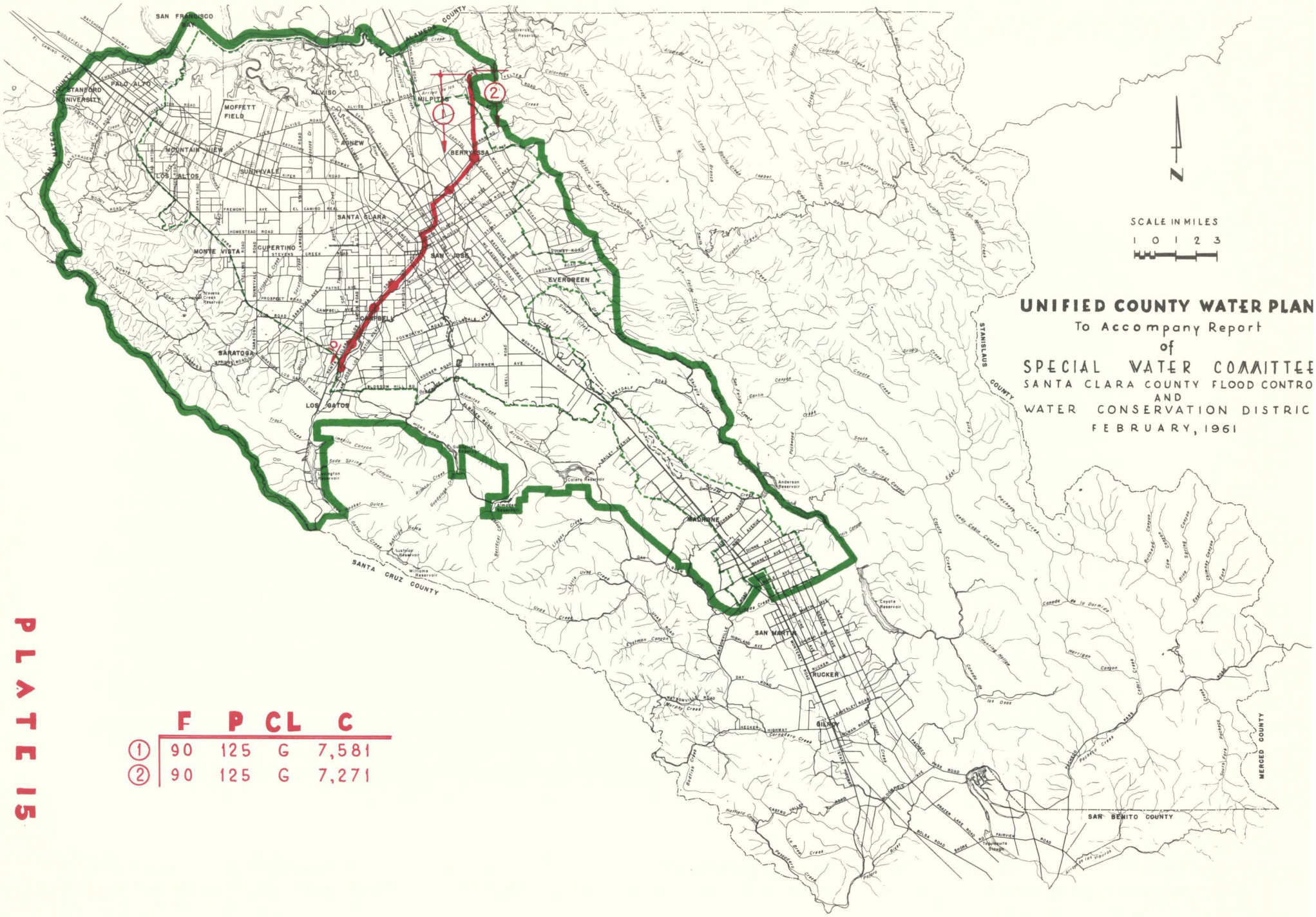
N*1) ① = 3600 K.W.-P.S. } DEPENDING ON
*2) ② = 2430 K.W.-P.S. } PIPE SIZES



	F	P	CL	C	
SCHEME ①	71.5 (44.2)	125	G	2,396	*1)
SCHEME ②	71.5 (44.2)	125	G	2,361	*2)

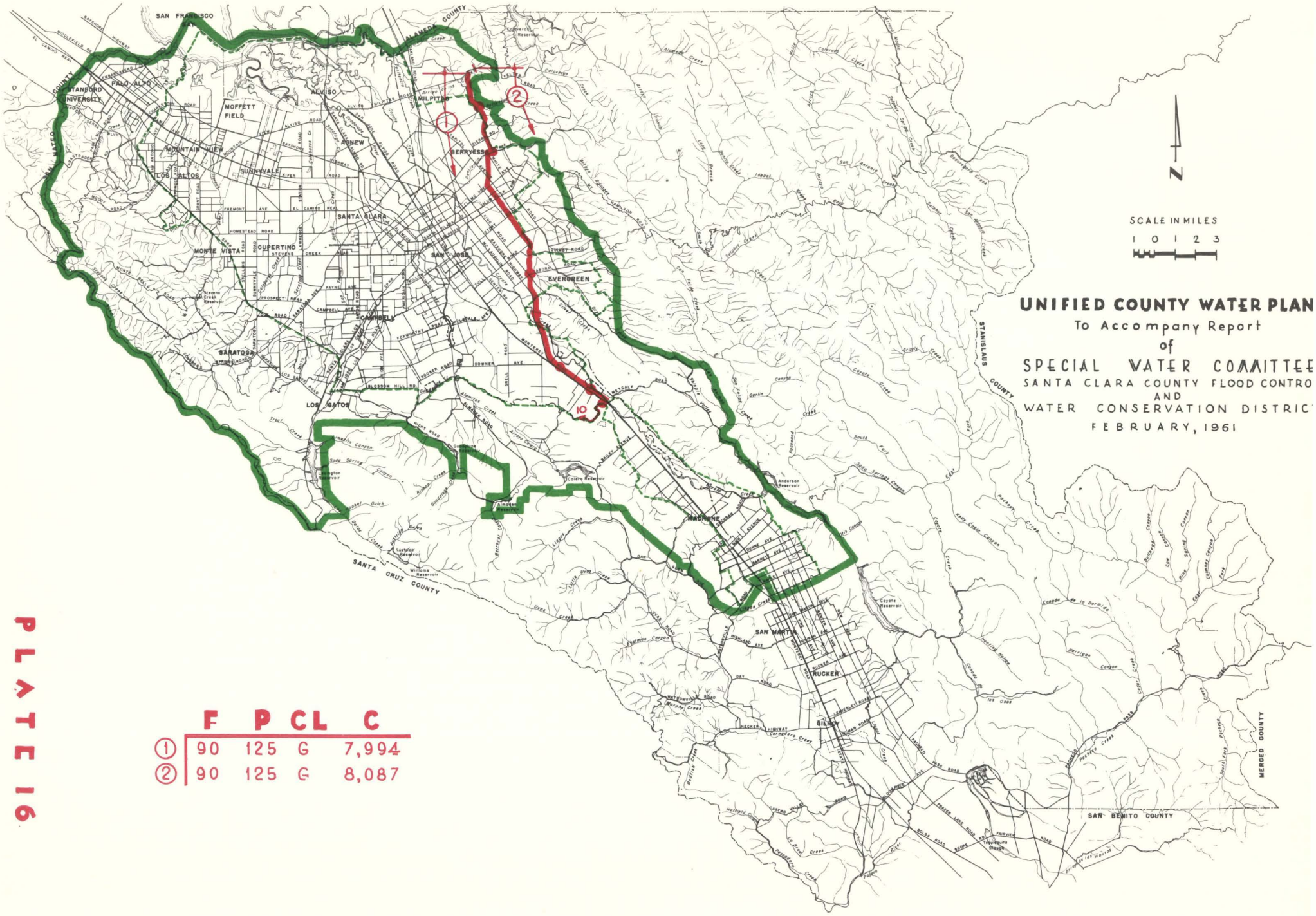
N *1) ① = 3600 K.W.-P.S. } DEPENDING ON
*2) ② = 2430 K.W.-P.S. } PIPE SIZES

PLATE 14



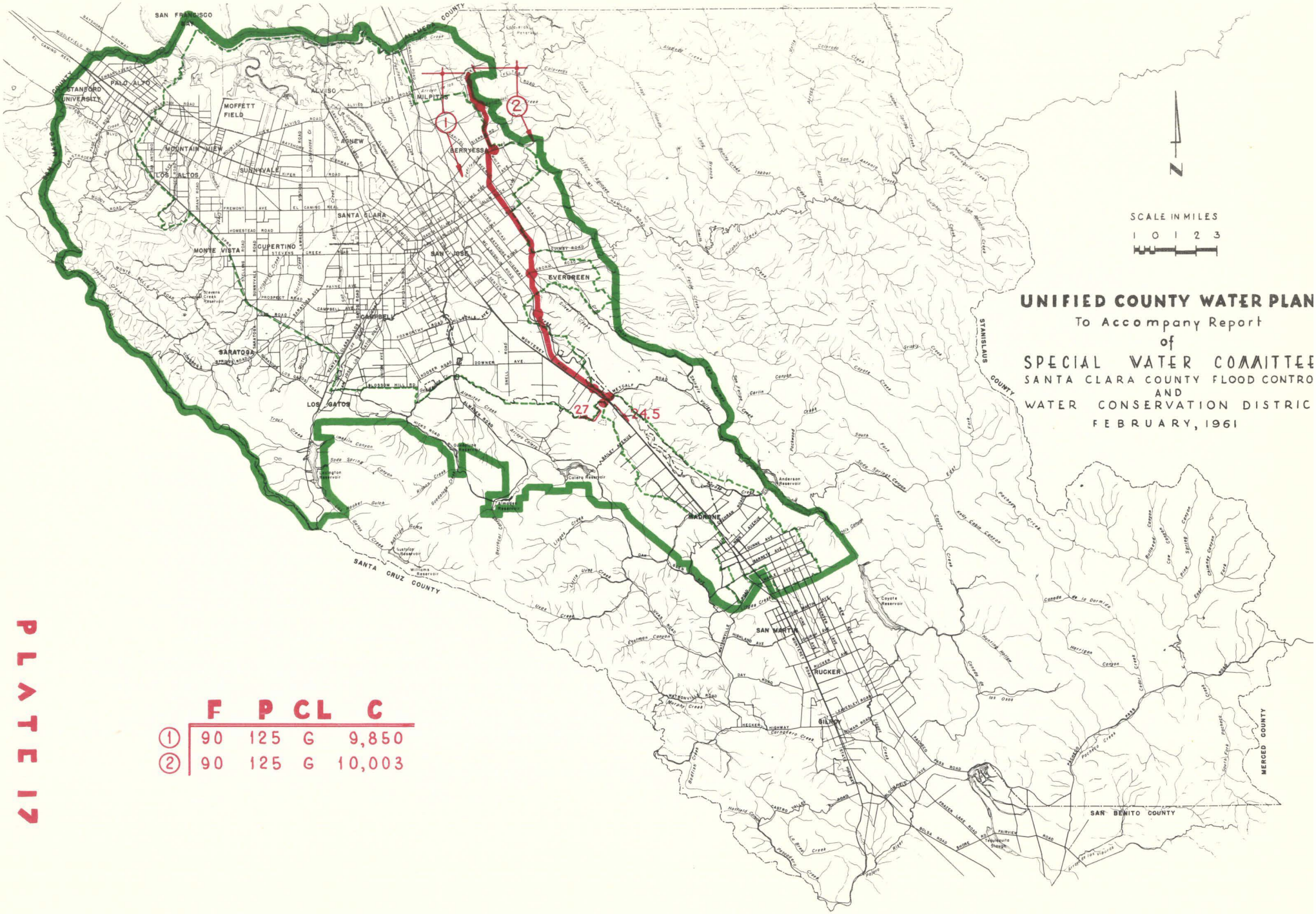
	F	P	CL	C
1	90	125	G	7,581
2	90	125	G	7,271

PLATE 15



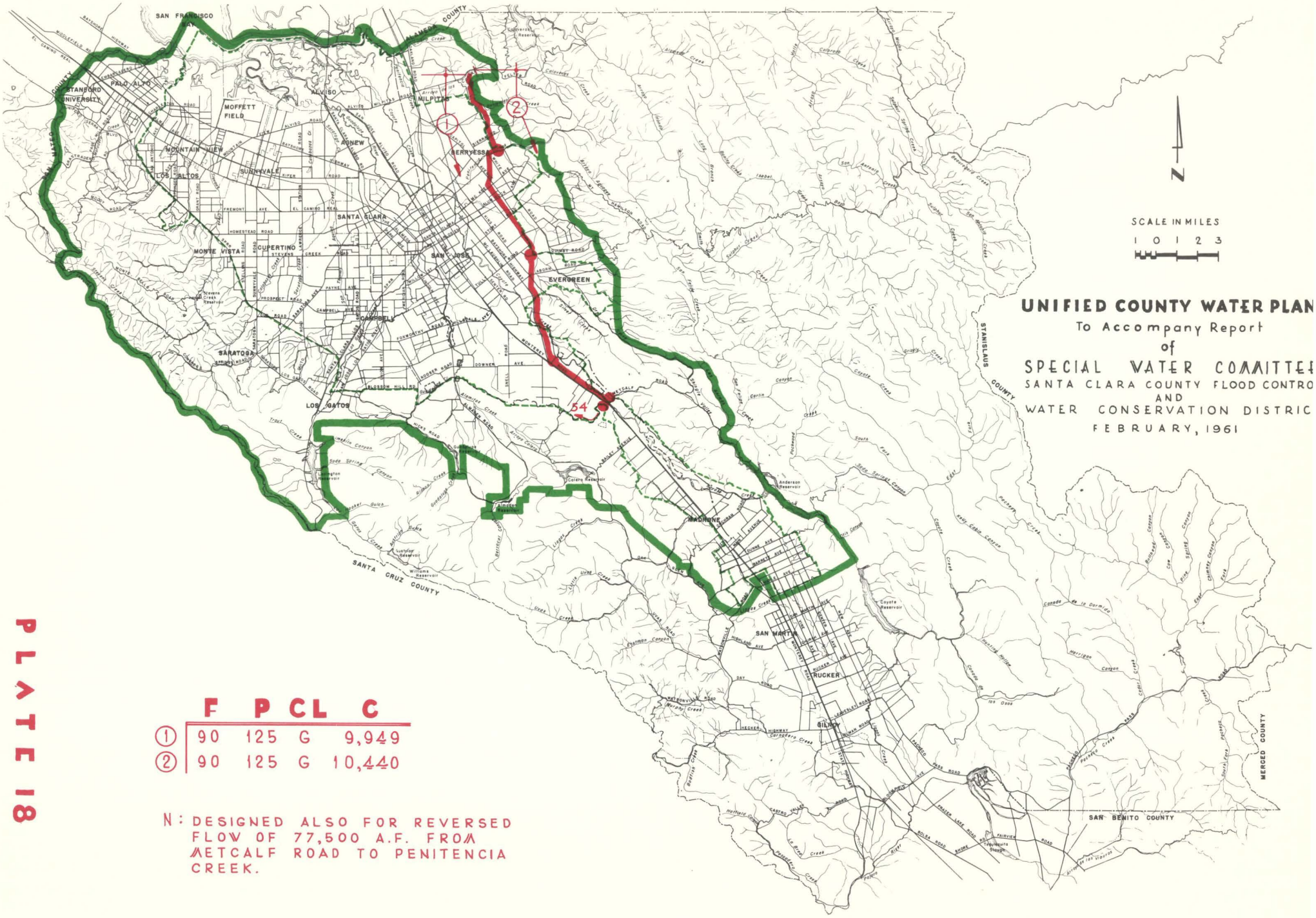
	F	P	CL	C
1	90	125	G	7,994
2	90	125	G	8,087

PLATE 16



	F	P	CL	C
1	90	125	G	9,850
2	90	125	G	10,003

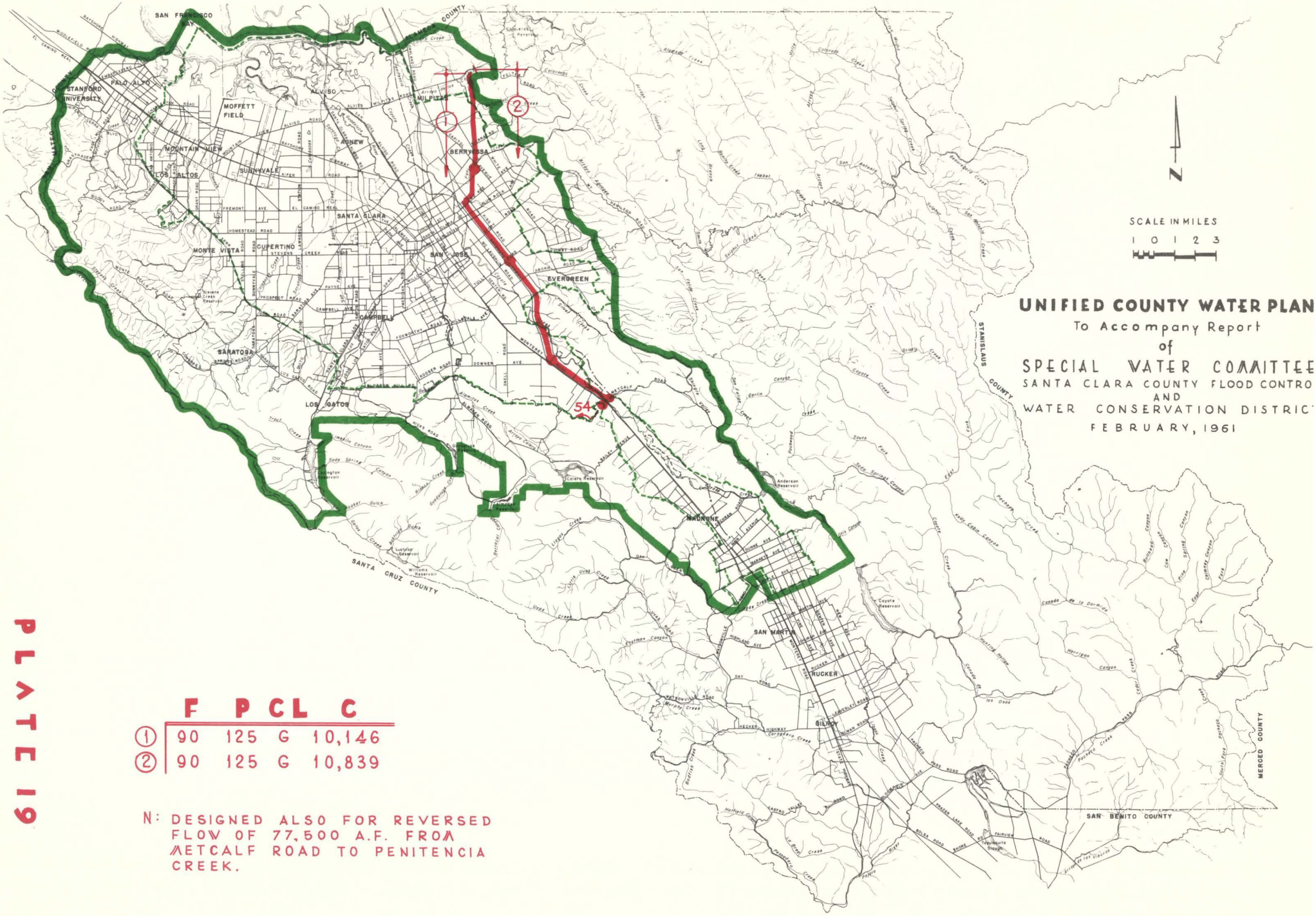
PLATE 17



	F	P	CL	C
1	90	125	G	9,949
2	90	125	G	10,440

N: DESIGNED ALSO FOR REVERSED FLOW OF 77,500 A.F. FROM METCALF ROAD TO PENITENCIA CREEK.

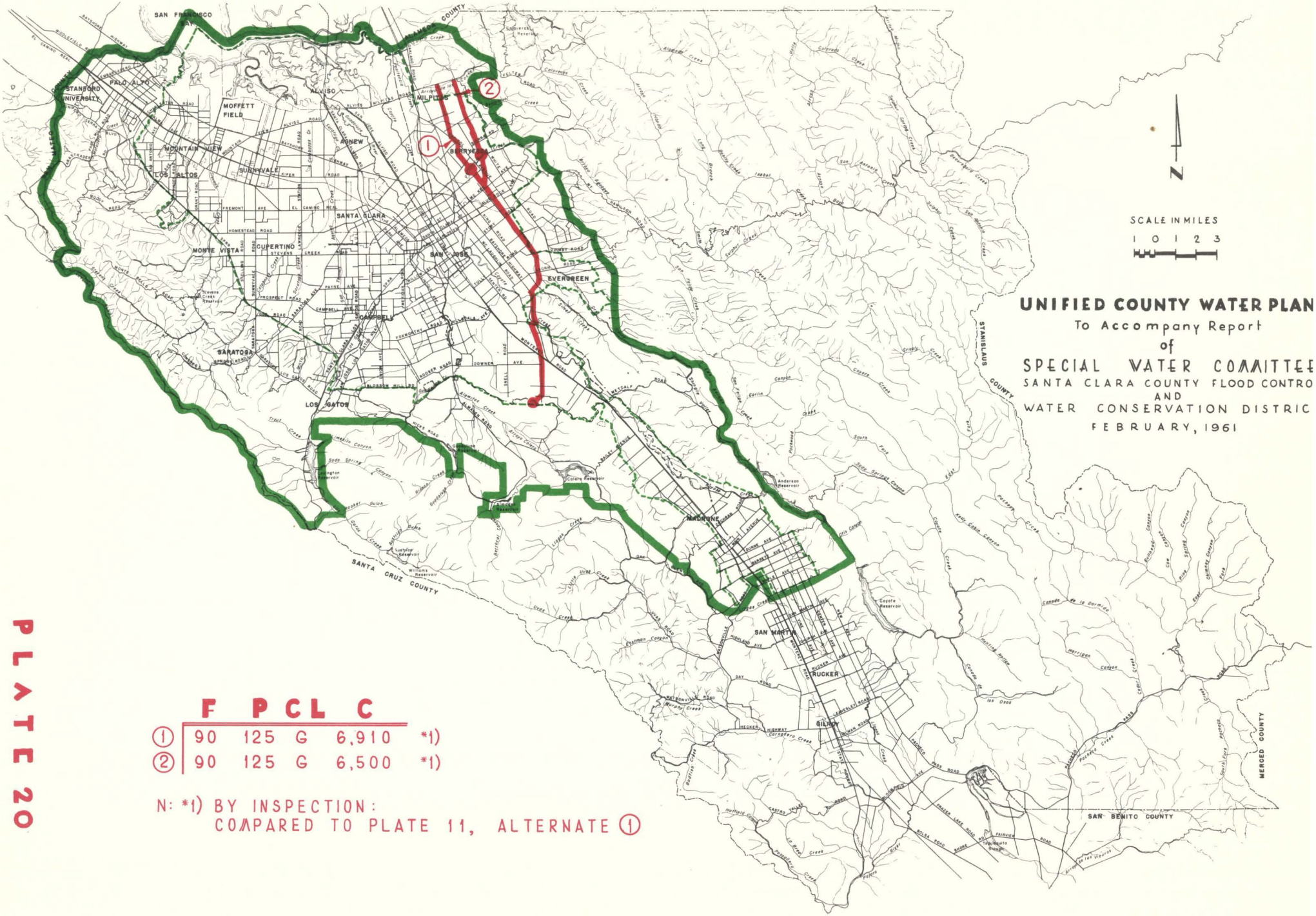
PLATE 18



	F	P	CL	C
1	90	125	G	10,146
2	90	125	G	10,839

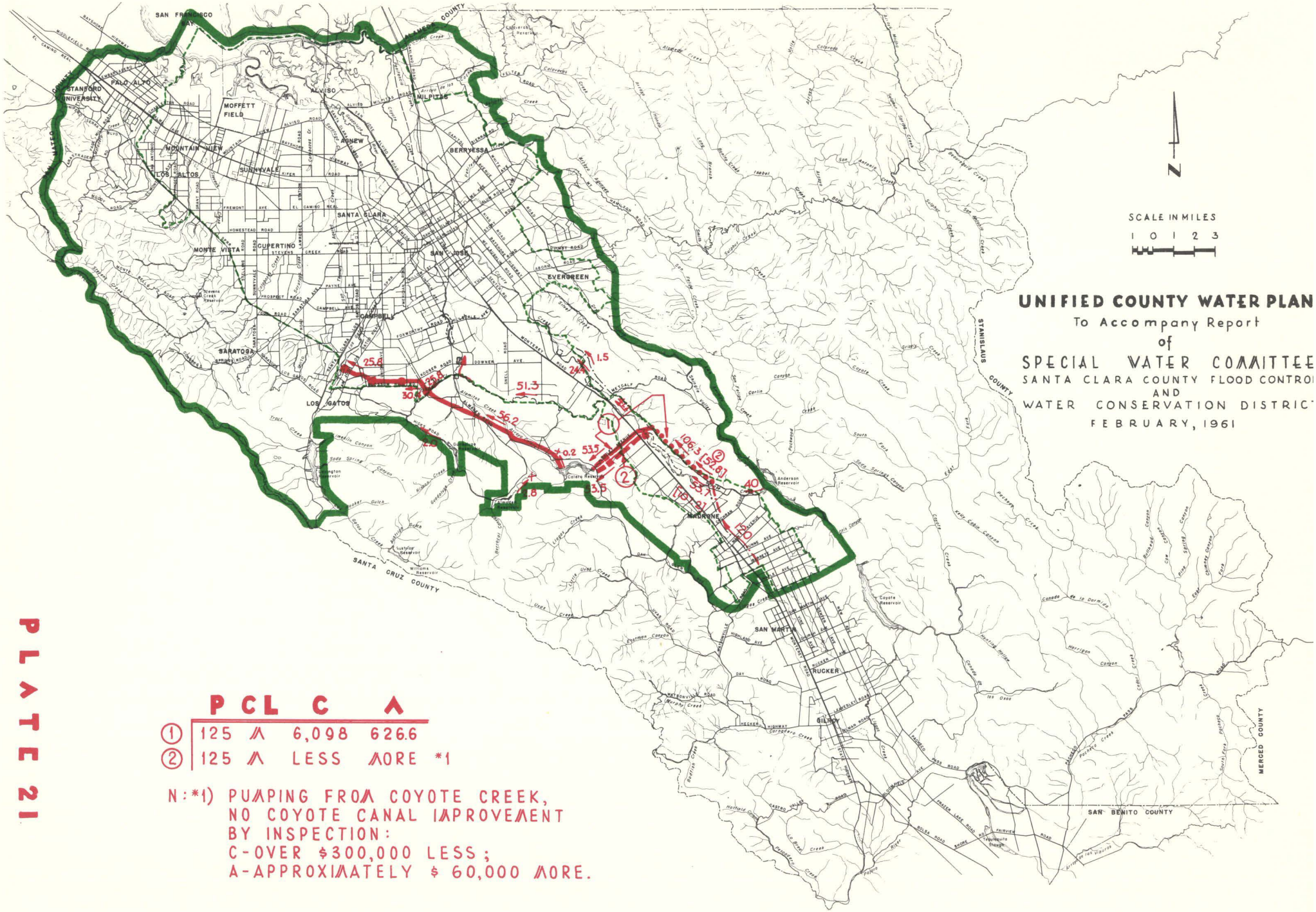
N: DESIGNED ALSO FOR REVERSED FLOW OF 77,500 A.F. FROM METCALF ROAD TO PENITENCIA CREEK.

PLATE 19



	F	P	CL	C	
1	90	125	G	6,910	*1)
2	90	125	G	6,500	*1)

N: *1) BY INSPECTION:
COMPARED TO PLATE 11, ALTERNATE 1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SANTA CLARA COUNTY FLOOD CONTROL
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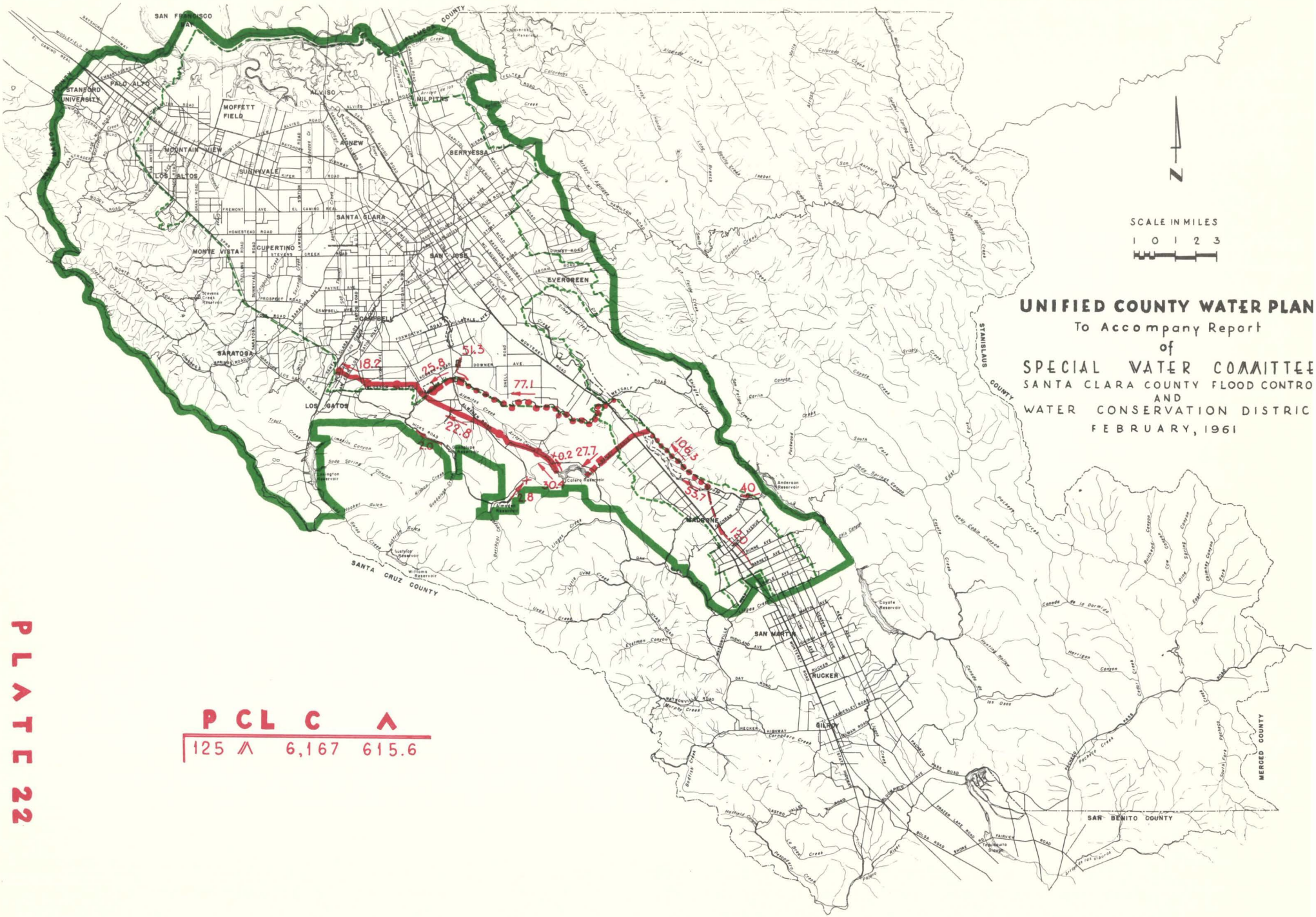
FEBRUARY, 1961
SCALE IN MILES
1 0 1 2 3
N
SAN FRANCISCO
STANFORD UNIVERSITY
PALO ALTO
MOFFETT FIELD
ALVISO
MILPITAS
AGNEW
BERRYESSA
MOUNTAIN VIEW
LOS ALTOS
SUNNYVALE
SANTA CLARA
CUPERTINO
MONTE VISTA
SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
HOLLISTER
SANTA CRUZ COUNTY
STANISLAUS COUNTY
MERCED COUNTY
SAN BENITO COUNTY
25.8
30.4
25.8
51.3
56.2
1.5
24.4
33.3
53.3
±0.2
3.5
1.8
106.3 [52.8]
[151.2]
40
35.0
PCL C A
① 125 M 6,098 626.6
② 125 M LESS MORE *1
N: *1) PUMPING FROM COYOTE CREEK,
NO COYOTE CANAL IMPROVEMENT
BY INSPECTION:
C-OVER $300,000 LESS;
A-APPROXIMATELY $ 60,000 MORE.
PLATE 21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SAN FRANCISCO BAY
STANFORD UNIVERSITY
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CUPERTINO
MONTE VISTA
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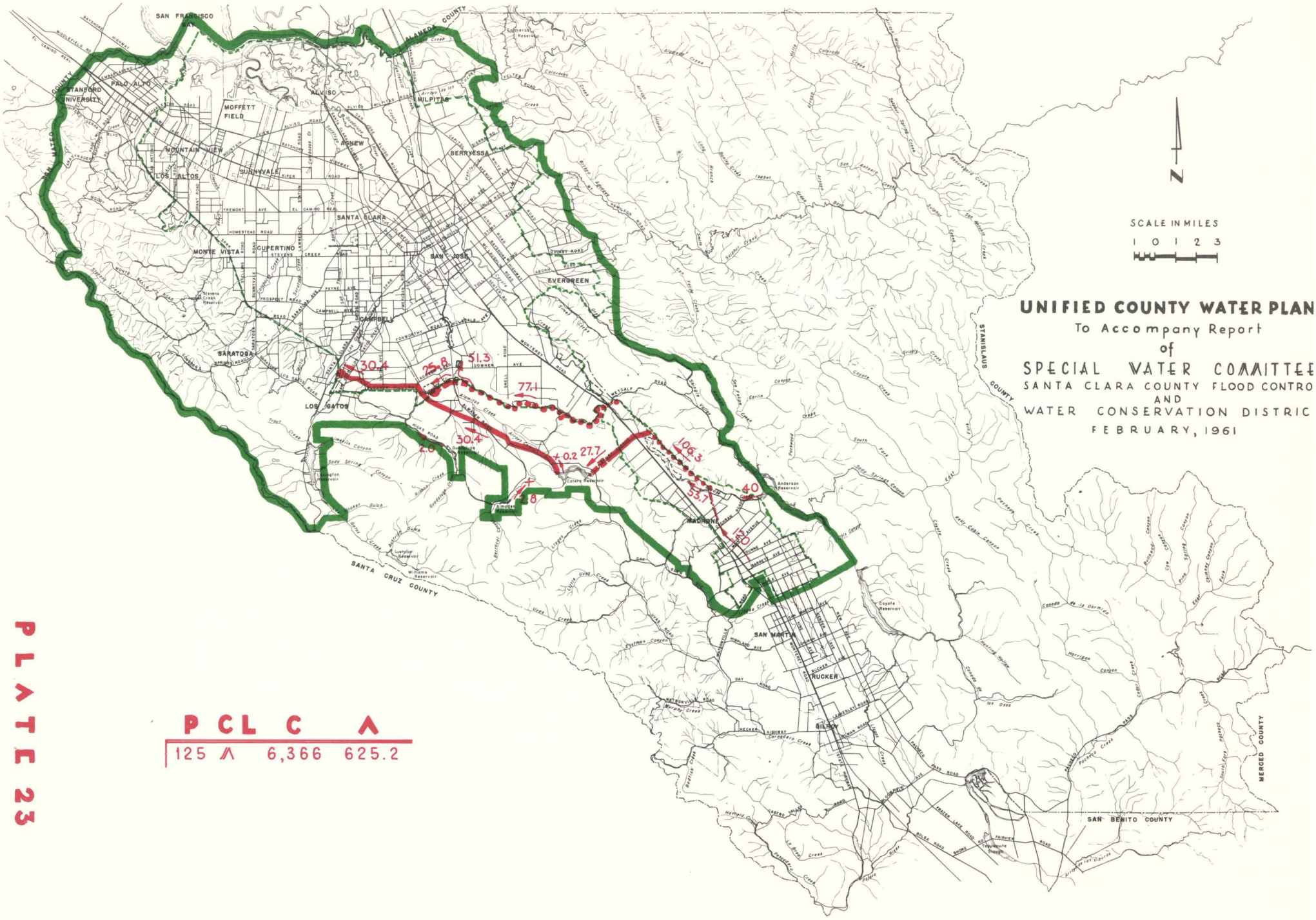
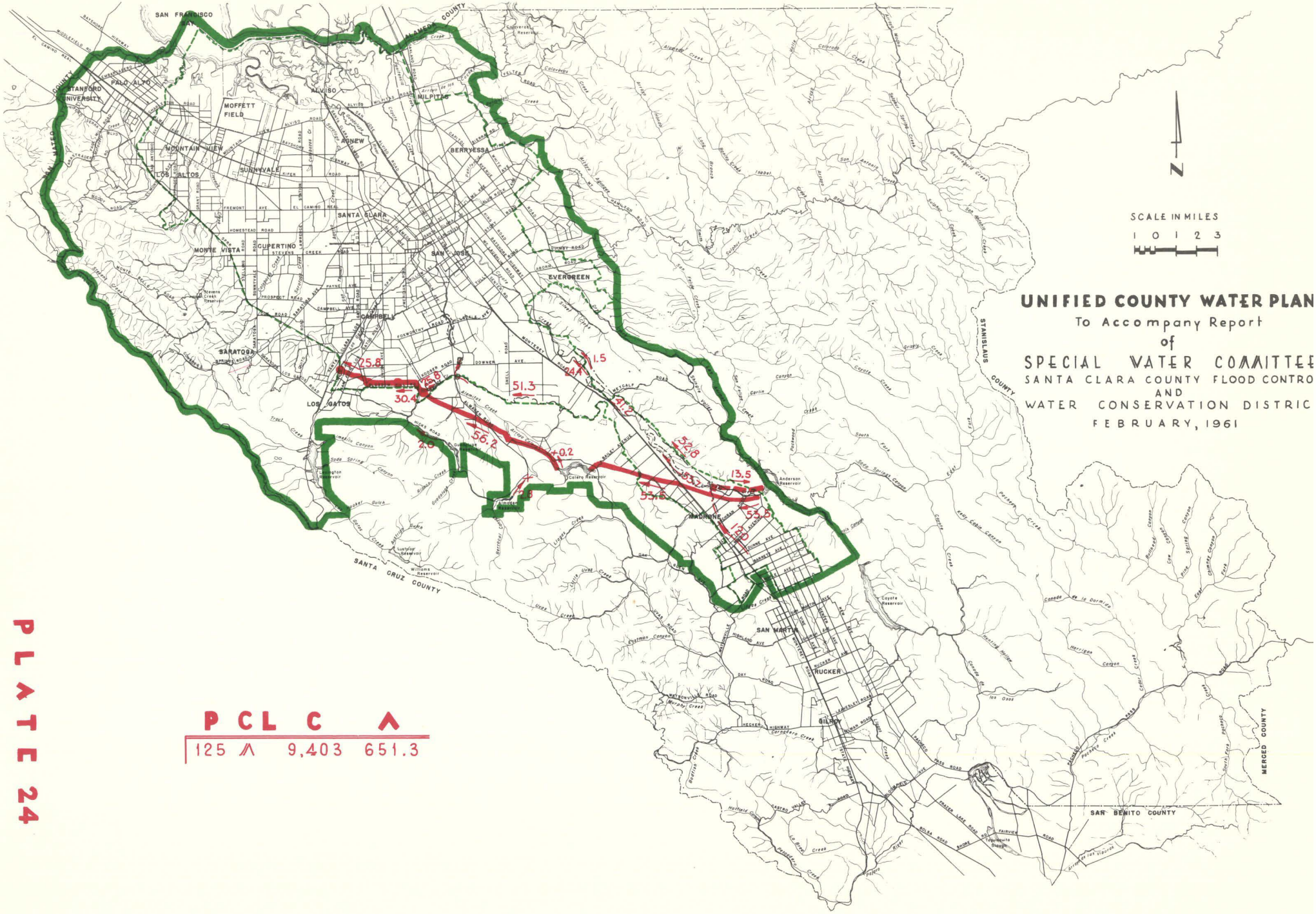
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
HOLLISTER
SANTA CRUZ COUNTY
STANISLAUS COUNTY
MERCED COUNTY
SAN BENITO COUNTY
Calero Reservoir
Anderson Reservoir
Coyote Reservoir
Lexington Reservoir
Lexington Dam
Lexington Spillway
Lexington Outlet
Lexington Pumping Plant
Lexington Pipeline
Lexington Tunnel
Lexington Reservoir Outlet
Lexington Reservoir Spillway
Lexington Reservoir Pumping Plant
Lexington Reservoir Pipeline
Lexington Reservoir



PCL C A
125 A 6,366 625.2

PLATE 23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FEBRUARY, 1961
SCALE IN MILES
1 0 1 2 3
N
SAN FRANCISCO
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STANFORD UNIVERSITY
PALO ALTO
ALVISO
MOFFETT FIELD
MILPITAS
MOUNTAIN VIEW
AGNEW
BERRYESSA
LOS ALTOS
SUNNYVALE
SANTA CLARA
CUPERTINO
MONTE VISTA
SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
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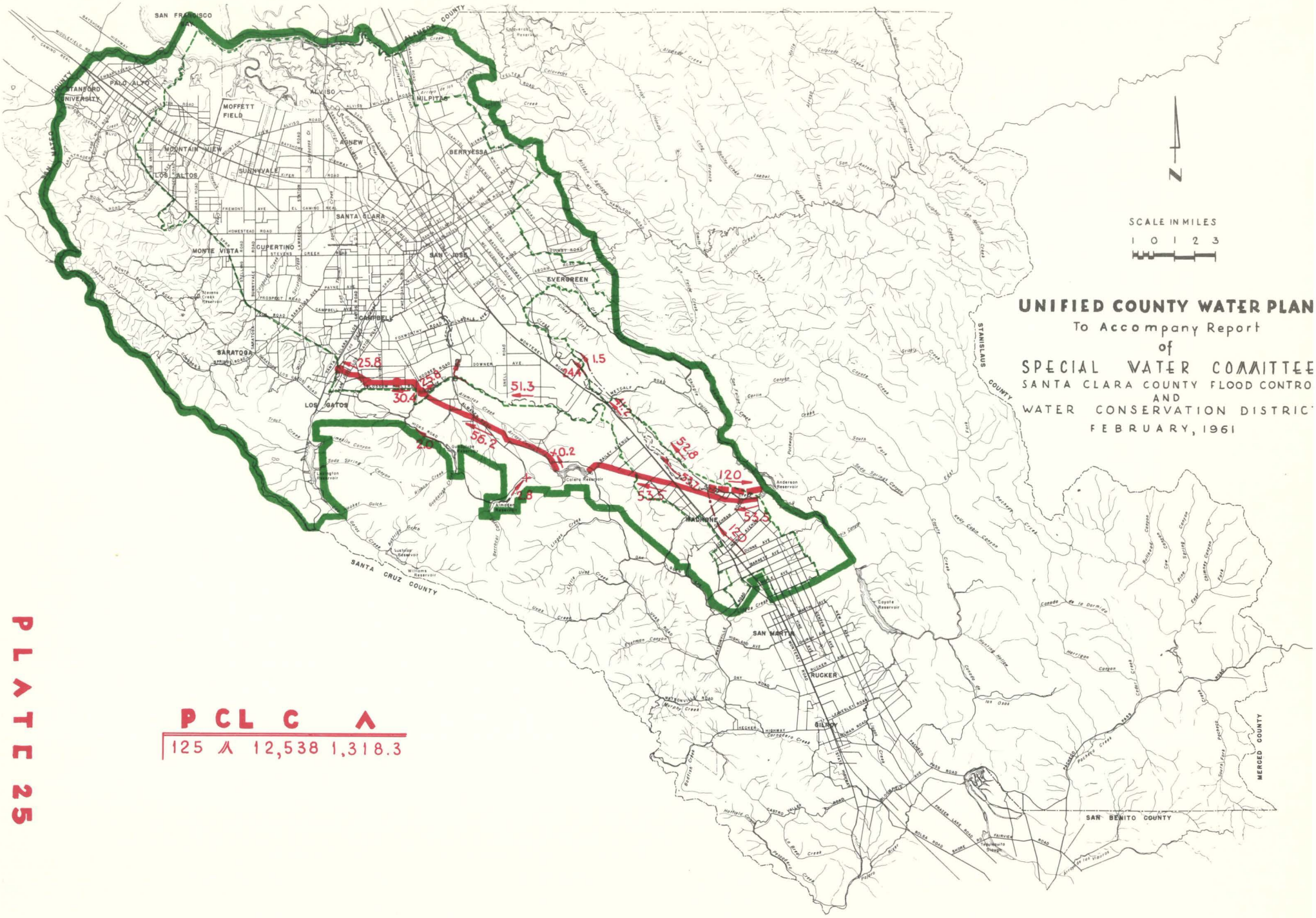
SANTA CRUZ COUNTY
STANISLAUS COUNTY
MERCED COUNTY
SAN BENITO COUNTY
Anderson Reservoir
Calero Reservoir
Coyote Reservoir
Lexington Reservoir
Lenihan Reservoir
Lexington Reservoir
Williams Reservoir
25.8
12.8
30.4
56.2
2.8
0.2
51.3
24.4
1.5
41.2
52.8
13.5
53.2
53.6
53.5
13.8
PCL C A
125 A 9,403 651.3

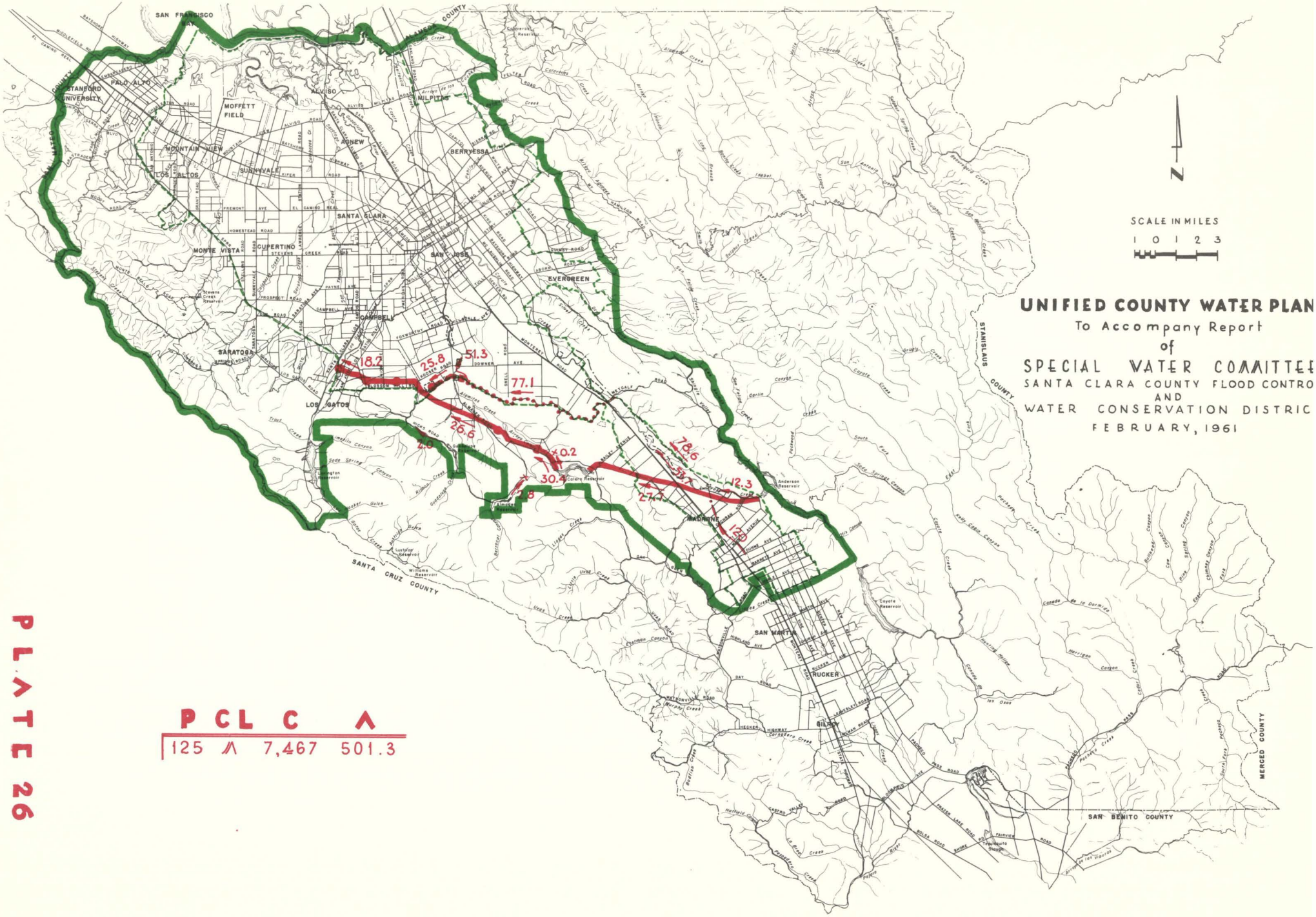
PLATE 24



PCL C A

125 ⅄ 12,538 1,318.3

PLATE 25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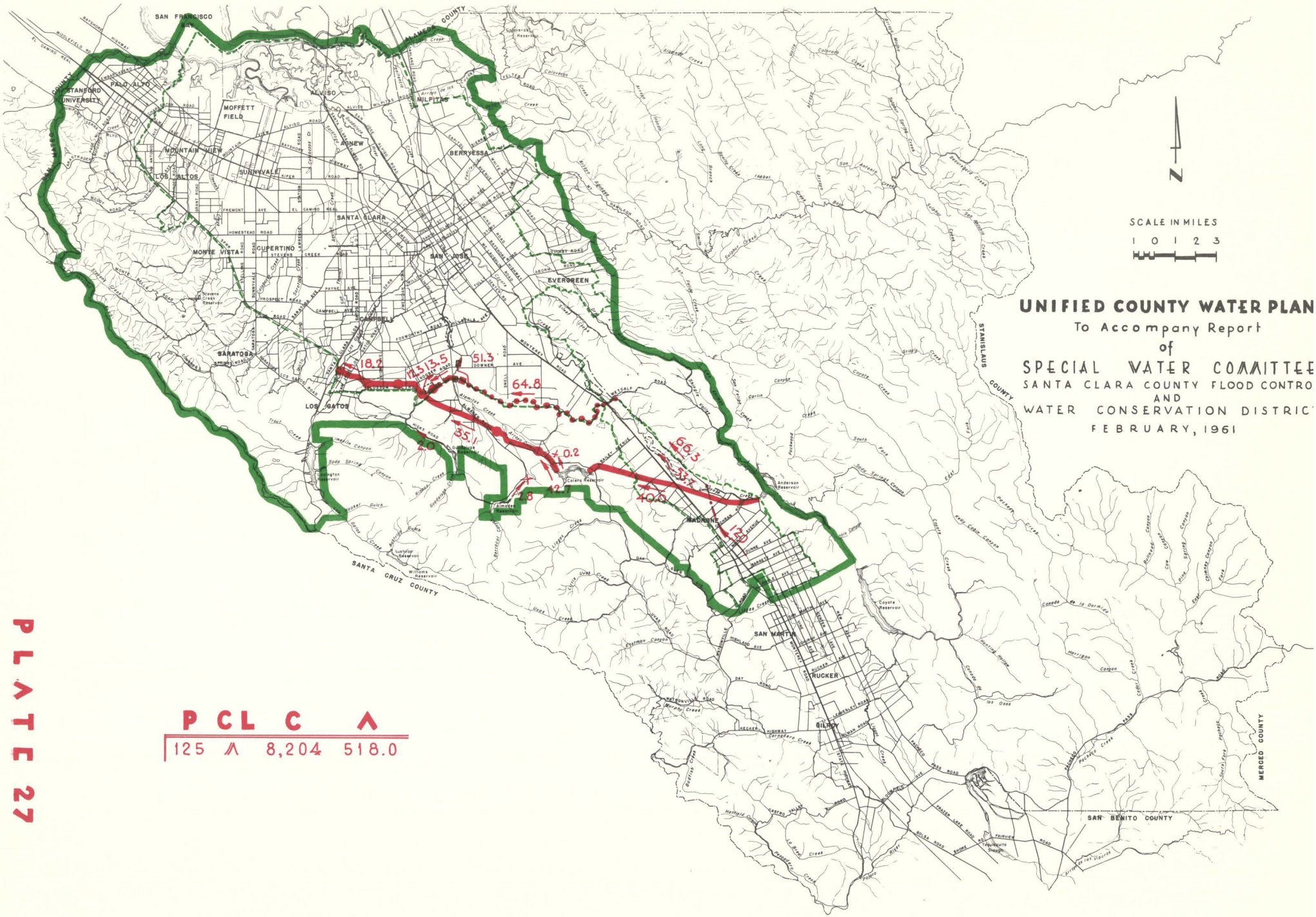
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
SANTA CRUZ COUNTY
STANISLAUS COUNTY
MERCED COUNTY
SAN BENITO COUNTY
18.2
25.8
51.3
77.1
26.6
2.0
0.2
30.4
3.8
78.6
58.7
12.3
27.4
12.8
PCL C A
125 M 7,467 501.3
PLATE 26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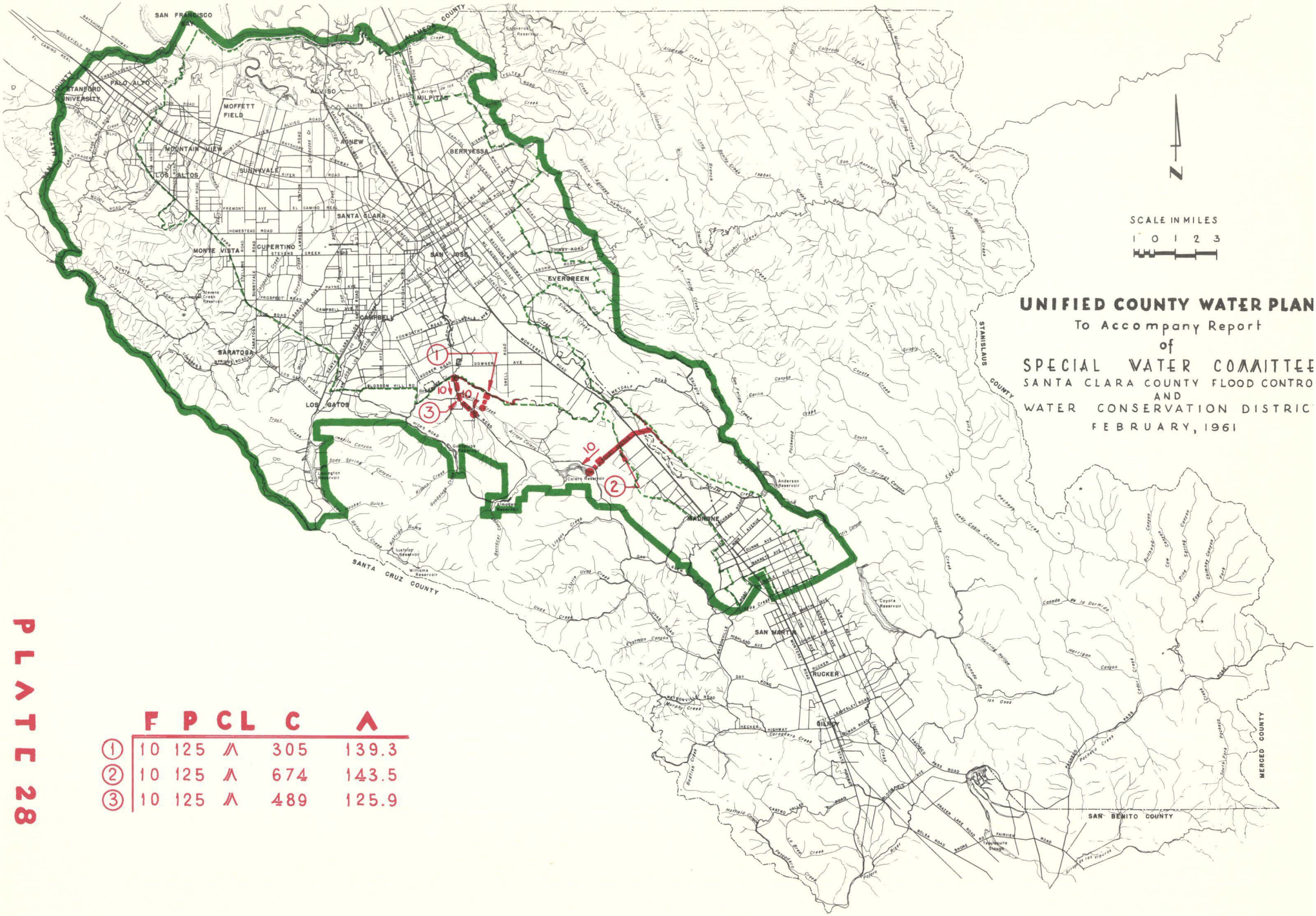
MOFFETT FIELD
ALVISO
MILPITAS
MOUNTAIN VIEW
AGNEW
BERRYESSA
LOS ALTOS
SUNNYVALE
SANTA CLARA
CUPERTINO
MONTE VISTA
SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
STANISLAUS COUNTY
SANTA CRUZ COUNTY
MERCED COUNTY
SAN BENITO COUNTY
18.2
13.5
51.3
64.8
35.1
2.0
+0.2
66.3
40.0
PCL C A
125 A 8,204 518.0
PLATE 27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STANISLAUS COUNTY
SANTA CRUZ COUNTY
SAN BENITO COUNTY
MERCED COUNTY
PALO ALTO
STANFORD UNIVERSITY
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MILPITAS
MOUNTAIN VIEW
LOS ALTOS
SUNNYVALE
AGNEW
BERRYESSA
SANTA CLARA
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SAN JOSE
EVERGREEN
CAMPBELL
SARATOGA
LOS GATOS
MADRONE
SAN MARTIN
GILROY
Calero Reservoir
Anderson Reservoir
Coyote Reservoir
Lexington Reservoir
Lyndon Reservoir
Williams Reservoir
Stevens Creek Reservoir
Uvas Creek
Coyote Creek
Los Gatos Creek
Guadalupe Creek
Alamitos Creek
Calera Creek
Arroyo Calera
Arroyo de los Alamitos
Arroyo de los Viboras
Canada de la Garnica
Hartigan Canyon
Cedro Creek
Pacheco Creek
Pacheco Pass
Tequisquite Creek
Fairview
Bolsa Road
Hecker Highway
Carnadero Creek
Hollister Creek
Castro Valley
Hatfield Creek
Beatties Creek
Watsonville Road
Murphy Creek
Day Road
Leavesley Road
Uhlan Road
Tainter Hollow
Canada de los Osos
Herrigan Canyon
Cedro Creek
Pacheco Pass
Pacheco Creek
South Fork
Kelly Cabin Canyon
Pickwood
Perkins Creek
Rancho Canyon
Cow Spring Canyon
Chiquito Canyon
East Fork
Grizzly Creek
Canada
Coyote Creek
Garlin Creek
Canada
Gilroy Creek
Uvas Creek
Eastman Canyon
Highland Ave
Monterey Highway
Bernal Road
Santa Teresa Blvd
Hellyer Avenue
Tennant Avenue
Monterey Road

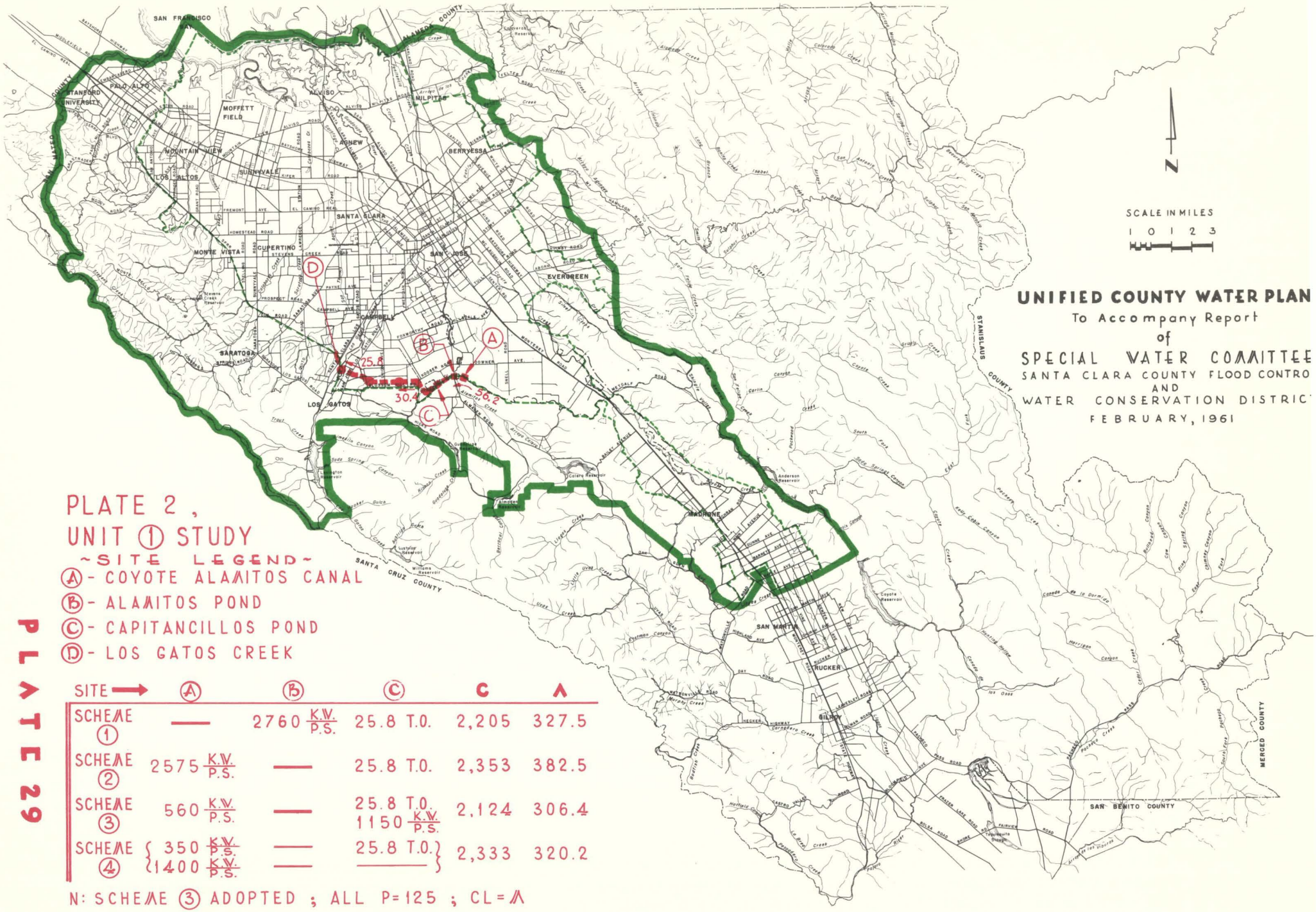


PLATE 2,
UNIT 1 STUDY

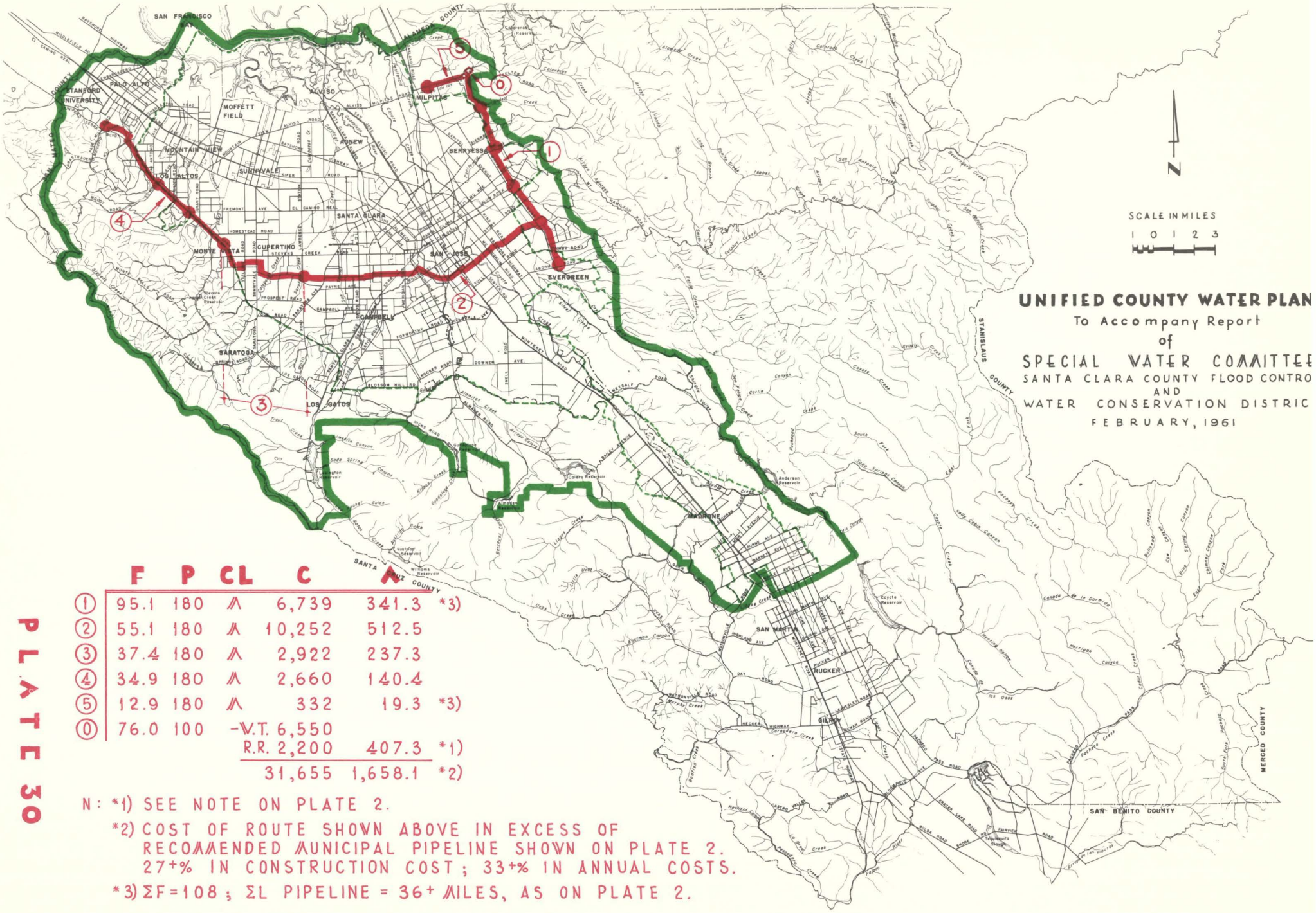
~SITE LEGEND~

(A) - COYOTE ALAMITOS CANAL
(B) - ALAMITOS POND
(C) - CAPITANCILLOS POND
(D) - LOS GATOS CREEK

SITE →	(A)	(B)	(C)	C	A
SCHEME (1)	—	2760 K.W./P.S.	25.8 T.O.	2,205	327.5
SCHEME (2)	2575 K.W./P.S.	—	25.8 T.O.	2,353	382.5
SCHEME (3)	560 K.W./P.S.	—	25.8 T.O. 1150 K.W./P.S.	2,124	306.4
SCHEME (4)	350 K.W./P.S. 1400 K.W./P.S.	— —	25.8 T.O. —	2,333	320.2

N: SCHEME (3) ADOPTED ; ALL P=125 ; CL=A

PLATE 29



	F	P	CL	C	A	
1	95.1	180	M	6,739	341.3	*3)
2	55.1	180	M	10,252	512.5	
3	37.4	180	M	2,922	237.3	
4	34.9	180	M	2,660	140.4	
5	12.9	180	M	332	19.3	*3)
0	76.0	100	-W.T.	6,550		
			R.R.	2,200	407.3	*1)
				31,655	1,658.1	*2)

N: *1) SEE NOTE ON PLATE 2.

*2) COST OF ROUTE SHOWN ABOVE IN EXCESS OF RECOMMENDED MUNICIPAL PIPELINE SHOWN ON PLATE 2. 27+% IN CONSTRUCTION COST; 33+% IN ANNUAL COSTS.

*3) ΣF=108; ΣL PIPELINE = 36+ MILES, AS ON PLATE 2.

PLATE 30